THE RAILWAY GAZETTE
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CONTENTS

	PAGE
Editorial Notes	561
Whitsuntide Railway Travel	563
In the News Again	564
The Rating of Railways	564
Letters to the Editor	566
The Scrap Heap	567
Overseas Railway Affairs	568
Condensing Locomotives	569
The New C.N.R. Station at Montreal—I	571
Personal	575
Transport Services and the War	577
Stock Market and Table	584

DIESEL RAILWAY TRACTION SUPPLEMENT

The June issue of THE RAILWAY GAZETTE *Supplement, illustrating and describing developments in Diesel Railway Traction, is now ready, price* 1s.

GOODS FOR EXPORT

The fact that goods made of raw materials in short supply owing to war conditions are advertised in this paper should not be taken as indicating that they are available for export

NOTICE TO SUBSCRIBERS

Consequent on the paper rationing, new subscribers cannot be accepted until further notice. Any applications will be put on a waiting list and will be dealt with in rotation in replacement of subscribers who do not renew their subscriptions

POSTING "THE RAILWAY GAZETTE" OVERSEAS

We would remind our readers that there are many overseas countries to which it is not permissible for private individuals to send printed journals and newspapers. THE RAILWAY GAZETTE *possesses the necessary permit and facilities for such dispatch.*

We would emphasise that copies addressed to places in Great Britain should not be re-directed to places overseas

TO CALLERS AND TELEPHONERS

Until further notice our office hours are:
Mondays to Fridays 9.30 *a.m. till* 5.30 *p.m.*
The office is closed on Saturdays

ANSWERS TO ENQUIRIES

By reason of staff shortage due to enlistment, we regret that it is no longer possible for us to answer enquiries involving research, or to supply dates when articles appeared in back numbers, either by telephone or by letter

ERRORS, PAPER, AND PRINTING

Owing to shortage of staff and altered printing arrangements due to the war, and less time available for proof reading, we ask our readers' indulgence for typographical and other errors they may observe from time to time, also for poorer paper and printing compared with pre-war standards

Post-War Employment Policy

THE Government White Paper on Employment Policy (Cmd. 6527) issued last weekend, has widespread implications from the viewpoint of transport in the post-war era. The Government accepts as a primary responsibility the maintenance of employment at a high level after the war, and to this end envisages planned spending on public works. Variations of taxation policy are also proposed as a means of keeping employment steady at a high level, and considerable stress is laid on a fostering of export trade, particularly during the transitional period immediately after the war. There can be no doubt that the implications of the White Paper are that Governmental control will not show any immediate tendency to decline at the end of the war; the auguries are to the contrary. The White Paper outlines an economic plan which has been talked of rather vaguely often enough, but this is the first time that a Government has committed itself to apply systematically such a scheme. It is noteworthy not only for its constructive proposals, but also for its frank facing of realities. From a railway viewpoint the realisation of the plan would provide a volume of traffic which might remove some of the problems which may be expected to arise from the adjustments of charges to cost when the wartime traffic peak tails off. An important part may also be played by the railways in stabilising public works programmes, as has been done on previous occasions.

Railway Air Proposals

In *The Sunday Times* last week Sir Harold Hartley gave an interview in his capacity as Chairman of the Railway Air Services Committee, in which he dealt with railway aviation policy. He pointed out that railways had specialised on cross-water air routes, and were partners of shipping companies operating over these routes. The railways now had holdings in sixteen air companies which operated 80 per cent. of the internal pre-war air routes. Over £500,000 had been invested in air companies, and over £300,000 incurred for development costs. Sir Harold Hartley spoke of the difficulty of operating aircraft economically within these small islands, and explained that costs in the United States were based on getting not less than 3,000 flying hours from aircraft each year; in this country only 800 to 1,000 flying hours could be obtained. The railways believed that cheap and comprehensive air services, both to the Continent and within these islands, were intimately linked. The railways had air powers to operate in Europe as far east as Stockholm, Budapest, and Italy. They were therefore preparing plans for air services between the principal cities of the United Kingdom and the Continent, co-ordinated both with air services within these islands and with all three methods of surface travel.

Hereditary Railway Directorships

The death on May 24 of Colonel Sir Herbert Lloyd Watkin Williams-Wynn, severs a link with the days of hereditary directorships, which formerly were a recognised feature of British railway practice, and had their origin in the arrangements which were effected in early years for building lines through important estates. Sir Watkin Williams-Wynn, who was the seventh baronet, succeeded his uncle in 1885 in the baronetcy created of Wynnstay, Denbighshire, in 1688. At the time of his succession, when he was 25 years old, he joined the board of the Great Western Railway Company in enjoyment of the right then possessed by the owner of Wynnstay. This right originated in 1845, when it was granted in connection with the North Wales Mineral Railway, incorporated in the previous year. That railway, in 1846, was amalgamated with another local line to form the Shrewsbury & Chester Railway, which in its turn was absorbed by the Great Western Railway as from September 1, 1854. Throughout these changes the Wynnstay right of appointment was preserved, and, in fact, survived until it was abolished by the passing of the Railways Act of 1921. Sir Watkin Williams-Wynn continued to serve as a Director, however, and remained on the G.W.R. board until last year, when he resigned after having been a member for nearly 58 years. We made editorial reference to this in our issue of April 9, 1943 (page 377). About 1870, gold was found on the Wynnstay Estate, and the gold passes held by some of the company's directors were made from this metal, including the pass which Sir Watkin held until his death, which he took over from his uncle.

Institute of Transport Jubilee President

As was recorded briefly in our last week's issue, Mr. Robert Kelso, Chairman & Managing Director of the General Steam Navigation Co. Ltd., has been elected President of the Institute of Transport for 1944-45, which is the Silver Jubilee session of the Institute. Mr. Kelso takes office on October 1 next, and on November 3 will preside at the anniversary luncheon commemo-

rating the meeting on November 3, 1919, at which the resolution was passed to found the Institute. All branches of transport have been represented by the presidents of that body since it was incorporated, and Mr. Kelso will succeed Sir William Wood, President of the London Midland & Scottish Railway Company, who in turn took over from Mr. J. S. Nicholl, Senior Executive Officer of McNamara & Co. Ltd., who has the distinction of having held office for two successive sessions, those of 1941-42 and 1942-43. He followed Mr. T. E. Thomas, General Manager, London Passenger Transport Board. A prominent aviation man who held the office of President was the late Air Vice-Marshal Sir Sefton Brancker, who occupied the chair during the 1928-29 session. The last member of the shipping industry to be President of the Institute was Sir Alfred Read, in 1936-37.

British-Owned Railways in Argentina

The discussion in the Argentine press as to the possibilities of steps being taken by the Argentine Government to repatriate British-owned railways in that country, which was dealt with at some length in our May 12 issue, is the subject of lengthy quotation and editorial comment in a recent issue of *The Financial Times*. The view is expressed that in view of the resentment which has been provoked on the part of British stockholders by the treatment to which they have been subjected, the contemplated transfer of ownership might make for better relations, but always provided that the transaction was on reasonable terms. Current experiences and market quotations are no criterion of real values of the lines. Referring to the suggested raising in Argentina of local bonds for from 1,000,000,000 to 1,500,000,000 pesos for the desired nationalisation project, *The Financial Times* comments that if that is anything near the purchase price alleged in Argentina to be reasonable, it needs to be characterised at once as hopelessly inadequate. The larger of the sums would give less than £100,000,000 sterling, and would be insufficient to cover the outstanding debenture debts of approximately £107,000,000, to say nothing of £45,000,000 of preference capital and £100,000,000 of equity issues. Moreover, the issued capital does not represent the whole of the money actually expended on capital works, and replacement values in large part will have increased due to two major wars.

Bolivar and Puerto Cabello Railways

A provisional agreement is announced for the acquisition by the Bolivar Railway Co. Ltd. of the undertaking and assets of the Puerto Cabello & Valencia Railway Co. Ltd. Both these systems have been worked under agreement since 1926 by the Bolivar company which in that year had acquired about 98 per cent. of the shares of the Puerto Cabello Company. Of different gauges, the two railways had for some time no physical connection, but they were united by the construction by the Venezuelan Government of the Palito-Palma Sola line which was opened for traffic in March, 1942, and has since been worked for that Government by the Bolivar Company. The company is informed that it is not expected that the Venezuelan authorities will have any objection to the proposed amalgamation. Under the scheme the cash purchase price of the Puerto Cabello undertaking would be £28,750, which should, in the liquidation, give its shareholders 12s. 6d. on each £10 share. There are more elaborate provisions regarding debentures and bonds. Since 1927 both lines have suffered serious decreases in traffic, but the Puerto Cabello has proved the more profitable since the copper mines on the Bolivar line closed down. There will be a reduction in the London office expenses of the two companies, and in the accounts kept in Venezuela, but under present working conditions payment of interest on Bolivar "C" debenture stock must await any improvement in net receipts.

Canadian Government Aviation Policy

Although in recent years the Government-owned Canadian National Railways Company and the privately-owned Canadian Pacific Railway Company have worked together with a little more harmony than formerly, the conflicting policy between the two great systems would seem to be as deep-seated as ever, and to be the real reason for the recent announcement of Canadian Government policy on aviation that, within one year from the ending of the European war, transport by air will be entirely separated from surface transport. The Government view of the circumstances which have led to the present position was clearly expressed in a statement made to the Canadian House of Commons on March 17, of which the salient features are set out on page 580. This shows that the C.P.R. could not see its way to co-operating with Government directors as a minority stockholder in Trans-Canada Air Lines, and withdrew from the scheme, leaving the C.N.R. as owner. The subsequent aviation activities of the C.P.R. in forming Canadian Pacific Air Lines is regarded by the Government as a challenge to the desired non-competitive position of Trans-Canada Air Lines. The Government solution is to require both railways to divest themselves of ownership of air lines, and to operate Trans-Canada Air Lines as a Government company, divorced from the C.N.R. This would appear to leave ownership and policy decisions of both railway and air line in the hands of the Government, even though the managements become segregated, while denying that facility to private interests. This, of course, is one of the drawbacks of a Government being judge in its own commercial cause, a matter to which we have often directed attention in our columns when the advocates of transport nationalisation are particularly vocal.

Continuous Brakes and Wagon Capacity in Russia

Among the many important steps which have been taken by the U.S.S.R. Railways in recent years is the replacement of four-wheel goods wagons with a capacity of 16-20 tons, and fitted only with hand brakes, by large bogie wagons capable of carrying from 40-60 tons, and equipped with automatic couplers and air brakes. Thus, in 1935 and 1936 (a period of two years), the total number of goods wagons rose only by 23,000, *i.e.*, from 591,000 to 614,000, and the number of four-wheel wagons actually fell from 520,000 to 518,000, yet, as the number of high-capacity wagons in service rose from 71,000 to 96,000, the total capacity of the wagon stock rose from 12·3 to 13·7 million tons, or no less than 1·4 million tons. In addition, during the same two years, the number of wagons fitted with air brakes rose from 213,000 to 262,000, and the number with automatic couplings from 20,000 to 77,000. We have available no later figures than these, but all the trends continued, and it is believed at an increasing rate, up to the outbreak of war. These details are published at the present time in response to the inquiry of a correspondent (see page 566), and it is unlikely that current details will be made available during the war, but we hope that our Soviet Allies will release considerably more technical railway information than heretofore, in peaceful times.

The First American Diesel Streamliner

A survey of the nation-wide development of high-speed diesel passenger transport in the United States, such as is included in the current issue of *The Railway Gazette, Diesel Railway Traction Supplement*, makes it difficult to realise that no more than ten years have elapsed since the first diesel-electric streamliner was placed on American rails. This was a three-car unit built by the Pullman-Standard Manufacturing Company, and delivered to the Union Pacific Railroad on February 12, 1934. Actually the M-10000, as this train was designated, had a 12-cylinder 600-b.h.p. engine which was not of the true diesel type, but burned distillate fuel; the train, fabricated from aluminium alloys, weighed no more than 85 tons, though 204 ft. long. In this length it incorporated a 33-ft. mail compartment, seating for 116 passengers, and a buffet kitchen, and in the weight full air-conditioning was included. Features new to American rolling stock practice included safety glass windows permanently sealed with rubber to exclude dirt, indirect lighting, four-position reclining seats, and decelerometer brake equipment to prevent wheel skidding. After a 12-weeks tour of the United States for demonstration purpose, No. M-10000 was named the City of Salina, and entered service on daily trips between Kansas City and Salina and Kansas City and Topeka, where it ran a mileage of 899,113 and earned a gross revenue of $717,685, before being withdrawn owing to its inadequate seating in relation to the travel demand that it created.

Explaining the "C.F.F." to the Children

A teacher in a primary school in Zurich, in the course of his lessons on "Our Homeland," a regular part of the Swiss school curriculum, recently has introduced a series dealing with the Swiss Federal Railways. From an account appearing in the official Bulletin it appears that most details of the working were admirably covered, both in class and during visits to stations and sheds, arranged with the co-operation of the railway authorities, who are desirous of seeing the scheme generally extended. In the class lessons the signal aspects were fully explained with the aid of coloured diagrams, and other details, such as the methods of numbering the different classes of vehicles and the significance of the various figures, letters and signs marked on them, which form such a feature of Continental railway working. Diagrams of classes of passenger and goods stations, and illustrations of the tickets used were given, and the principles of brakes, electric traction and the working of steam locomotives were also covered. As will be expected, the

boys and girls took with more than ordinary liking to these lessons, and a visit to the Zurich power signal box was an especial delight.

American Locomotive Power

Records of the steam locomotives ordered by U.S.A. railways during 1943 again emphasise the exceptional power of what are considered nowadays in that country as standard types. Out of 472 locomotives, six had four-coupled, and 72 six-coupled wheels, 55 of the latter were articulated, with 2-6-6-4, 4-6-6-4, or 4-6-6-6 wheel arrangements. No fewer than 249 were of eight-coupled, and 145 of ten-coupled, types. The latter were all 2-10-4s, of which one order was for 115 of a new design, for the Pennsylvania Railroad, now being built in its Altoona shops. Among eight-coupled types, the 4-8-4 is popular, and four railways ordered such engines, to a total of 56; and orders for 2-8-4 locomotives, at 88, showed an increase. Orders for articulated locomotives amounted to 100, divided fairly equally between the 2-6-6-4, 4-6-6-4, 4-6-6-6, 2-8-8-4, 4-8-8-2 and 4-8-8-4 types. Out of the 472 locomotives ordered, only 54 (0-4-0s, 0-6-0s, 0-8-0s and 2-8-0s) were for shunting, which in American construction today is looked after almost entirely by diesel-electric power. Of the remaining 418, it is notable that all but 29 (2-8-2 and 4-8-2 locomotives) require a bogie to carry the firebox end, although only the Chesapeake & Ohio Railway, with its articulated 2-6-6-6 engines, goes so far as to support the firebox on a 6-wheel bogie.

The New Montreal "Terminal"

THE widespread interest which normally attaches to any important new railway station is intensified at present in view of the post-war need for rebuilding, partly because of air-raid damage, and partly by reason of a period of years during which little or none of such work has been effected. The only example of an important new station being brought into use during the war is provided by Montreal, where the so-called "terminal"—eventually to bear the name Bonaventure—was opened for public traffic on July 15 of last year. Montreal is situated on an island, 32 miles long and 10 miles wide, which is the largest of a group occupying a position at the junction of the St. Lawrence and Ottawa rivers. On this island resides about one tenth of the population of Canada, and its topography is responsible for the complicated railway system serving the city, for the approaches depend upon the bridges connecting the island with the mainland, of which there are only two across the River St. Lawrence, namely, the Victoria Bridge of the Canadian National Railways and the Caughnawaga Bridge of the Canadian Pacific Railway.

By reason of its history, the Canadian National Railways inherited a mixed selection of facilities, and many plans have been made for co-ordinating these. The Montreal & Lachine Railroad, one of the earliest in Canada, was incorporated in 1846 and built a line from the city to Lachine Wharf, a distance of nine miles, upon which the first passenger train operated on November 22, 1847. Its terminus took the name Bonaventure from that of the street which the railway paralleled, and, although St. Bonaventure Street was transformed into St. James Street in 1883, the railway station name remained unchanged. The original station does not appear to have been an imposing structure, and, when the Grand Trunk Railway acquired it in 1852, it investigated the possibilities of a Central Station in Montreal but dropped the scheme because of the high cost of land. The construction of a larger building was begun in 1886, and completed in October, 1888, and this building fulfilled its purpose until March 1, 1916, when a serious fire gutted the interior. The structure was rebuilt in a modified form and still handles special traffic connected with the war, although it is destined to be withdrawn from passenger service afterwards, and the name then transferred to the new Central Station.

Another inheritance of the Canadian National Railways in 1922 was the Tunnel Station of the old Canadian Northern Railway, centrally located in the city near the south portal of the 3·15-mile tunnel under Mount Royal, which serves trains moving to and from the north and west, and this was the site eventually selected for the proposed central passenger station. The scheme was far more extensive than the rebuilding of a station, for it involved extensive grade separation, and the construction of important link lines on the outskirts of the city, as well as the prolongation southward of the railway from the tunnel terminus over a viaduct through the heart of the city, to make connections for the south and west with C.N.R. lines which heretofore terminated at Bonaventure. Work on this scheme was undertaken in 1929, and was suspended in 1931 because of the depression. It was resumed in 1939, and brought up to the stage of opening the new station and the viaduct last year, but much remains to be completed after the war. Even in their revised form, the improvements are of unusual magnitude, and, up to the date that the station was opened, it involved an expenditure of approximately $27,000,000. A measure of the extent of the modification is given by the fact that the full project was estimated to cost roundly $50,000,000.

The new station is usually called the "New Montreal Terminal" in the publicity literature of the Canadian National Railways, although it appears in the timetables simply as "Central Station," pending the intended transfer of the name Bonaventure when the old structure of that famous title is abandoned and demolished after the war. For the benefit of British readers it is as well to record that the word *terminal* is commonly used in Canada to denote an important station, which explains the terminological anomaly that a dead-end terminus (the old Tunnel Station) converted into a through station should be described by a word to which it is no longer entitled. In this issue we publish the first of a series of articles describing and illustrating the new station and associated works.

Whitsuntide Railway Travel

THERE is no doubt that, generally, the British public fully realised the desirability of avoiding long-distance rail travel during the Whitsuntide period and the number of passengers travelling appears to have been substantially below normal. Even at Paddington, notwithstanding the somewhat highly coloured press reports to the contrary, the volume of traffic was appreciably less than normal, and the fact that some trains were unable to convey all the passengers who desired to travel was due solely to the reduction in the number of long-distance trains normally run.

It will be recalled that, at previous Bank Holiday periods, in addition to the ordinary train service, the railways were authorised by the Ministry of War Transport to run additional trains during the holiday period so long as the total number did not exceed the maximum number run on any ordinary weekday or Sunday, as the case might be, in the preceding period. On this occasion, the railways were directed not to run any additional trains and to cancel ordinary services wherever possible.

The pressure at Paddington, however, did not arise solely from this limitation, but from the fact that the limitation was imposed on a summer train service, introduced the previous weekend, which provided for fewer trains compared even with the preceding winter service, and considerably less trains than ran in the corresponding period of last year.

Our view is that the re-issue of the timetable, which may have been rendered necessary because of the many alterations made in the services operating at its introduction in October last, should not have been made only a week before Whitsun. We feel that, in any case, the question of the Whitsuntide holiday travel could have been handled more successfully than it has been. Large numbers of the public are working away from home and their desire to take advantage of facilities which exist for visiting their homes is only natural and does much to maintain morale in these critical days.

We should have thought it most desirable, therefore, that full publicity should have been given to the limited facilities available but, in fact, obtaining such information appears to have been made as difficult as possible. We feel some concern in this matter as the public has no time or inclination for appreciating the niceties of the control exercised over the railways by the Ministry of War Transport. All it knows is that the railway companies introduced a summer timetable on May 22, a week before Whitsun, which provided for many long-distance trains which, in fact, were cancelled on or before May 22, and that it was extremely difficult subsequently to ascertain what trains were actually running.

At one main-line station on Whitsun Monday, for example, the usual broad-sheet notices indicated that certain main-line trains were running as shown in the timetable, whereas, in fact, they had been cancelled for over a fortnight. Their cancellation was not included in the printed list of alterations attached to the broad sheet, but was shown on a few chalk-written blackboards on various parts of the station. For this state of affairs the public somewhat naturally blames the railways.

Our view is that the railways should not have been directed to issue a summer timetable this year and that, in any case, it should not have been put into operation a week before Whitsun. Assuming a new timetable was required, it should have

been issued earlier in May or after the holiday, and should not have contained a large number of trains it was not proposed to run. Also, it should have been advertised, not as the summer timetable, but by some other title implying that it was a reduction of the services then running, and full publicity should have been, and should now be, given to the times of the trains cancelled.

It is farcical at these times that passengers should have to rely on chalk notices on blackboards at stations. Although we fully appreciate that "reasons of national security" could be pleaded by the controlling authorities, we are somewhat sceptical of the advantages to be derived from continuance of the present policy, but are fully alive to the unnecessary inconvenience to which passengers are being subjected, and the damage which is being caused to the reputation of the railway companies.

In the News Again

NOT many variations in our wartime way of life provoke more discussion and comment than curtailments of train service. We had been warned of the likelihood of such happenings for months, and were beginning to pass from a state of silent thankfulness at finding the train we wanted still running, to a mild disbelief that it would ever be taken off. It may have been imagination, but it seemed to us that when the new timetables were issued on May 22, copies were displayed on railway bookstalls more lavishly than in the past, and between their covers the crisp, uncut pages were clearly packed with a surfeit of excellent trains.

Some services, we had been informed, were booked to run at week-ends only, and while bearing suspicious resemblance to the reliefs and duplicates which cause M.P.s so much concern, we thought they would make good escapist reading even if conscience made us deplore the idea of travelling in them ourselves. We accordingly bought a timetable, and the young lady behind the counter warned us in a sepulchral whisper as she handed it over that the whole of its contents were liable to cancellation without notice, evidently disapproving of persons who wasted sixpence upon what at any moment might become a mere catalogue of fragrant memories. Already, indeed, the blackboards were proclaiming the first withdrawals, and not only newspaper reporters, but cartoonists and even leader writers were sharpening their pencils to give these extraordinary happenings due prominence. At least one writer found fault at earlier notice not being given of the trains to be withdrawn day by day, and appeared to recommend more widespread and timely publicity being accorded to all those little items of information from which an enemy intelligence service can build up a picture of what is going on in an opposing country. Some cartoonists and writers of headlines tried to rouse their less imaginative readers to a sense of awe by implying that they themselves might find their morning business trains had gone the way of the others, despite the frequent official statements that essential services will be maintained.

It struck us as unfortunate that some newspapers should suggest almost an air of triumph among railway staff at the actual imposition of these long-threatened cuts, as though they had constituted themselves judges of whose journeys are and whose are not necessary, but certain sections of the press have so long been shaky on railway facts that it is probably unfair to expect them to give at short notice a correct interpretation of railway atmosphere. We have certainly come across no instances of railway employees showing the sort of pleasure in saying "no trains today" that was clearly relished earlier in the war by some shopkeepers when asked for goods in short supply. At the same time we have observed a tendency among disappointed travellers to disbelieve the categorical statements of inquiry office clerks, and to linger a few seconds apparently in the hope that a train may be produced from "under the counter."

There have been plenty of stories of queues for trains and crowded coaches in the press, it being apparently felt that even long custom will not reduce the power of an eyewitness account of such episodes to astound and to dismay. We shall remember more particularly the scene at one London terminus, where we saw a main-line departure platform not only empty but apparently so unlikely to be occupied for some time to come that some of the staff were down on the line picking up litter. In fact the amount of waste paper and other salvage revealed by the unforeseen emptiness of the platform was reminiscent of the days before it became general knowledge that "paper packs a punch," and taught us a hitherto-unsuspected habit of the incurable litter fiend, who, shamed at last out of scattering his scraps in public view, shuffles them furtively beneath the wheels of a convenient train.

The Rating of Railways

RATING law in England and Wales dates from the Poor Relief Act, 1601. The Parochial Assessments Act of 1836 provided that the rate upon rateable hereditaments in each parish should be based upon their net annual value, *i.e.*, on the rent at which they might reasonably be expected to let from year to year . . . . deducting therefrom the probable average annual cost of the repairs, insurance, and other expenses necessary to maintain them in a state to command such rent. Substantially the same language was used in the Parochial Assessment Act, 1862, and in the Valuation of Property (Metropolis) Act, 1869, with regard to London. In the assessmere catalogue of fragrant memories. Already, indeed, the blackgasworks, and the like, the operations of which might stretch far beyond the limits of any individual parish, the Courts were compelled to evolve a system of calculation which involved a number of very difficult assumptions, but which became recognised as the standard method. In the case of a railway, the undertaking was divided into the portions regarded as directly productive of profit, such as the permanent way, and the portions regarded as only indirectly productive, such as stations. The latter were usually valued by taking the cost of erection and allowing a percentage on that cost. This method was commonly described as the "contractor's basis." For assessing the rateable value of the permanent way the method commonly known as the "profits basis" was adopted.

To apply the profits basis, the calculation began by ascertaining the gross receipts earned in the parish for the latest period before the date of the rate. From these gross receipts was deducted a proper proportion of the working expenses throughout the system, and a deduction had further to be made for the portion allocated to the parish of rent hypothetically paid for the use of stations and other indirectly productive assets, and for the rates payable thereon. The amount remaining after these deductions from the gross receipts earned in the parish was taken as the net profit divisible between the owner and the hypothetical tenant. Since the hypothetical tenant was rateable only in respect of hereditaments which he was supposed to occupy, it was necessary to make a fair deduction for the use of his personalty and stock-in-trade. The method adopted was to estimate the amount of capital required to work the whole system, to calculate a fair proportion of this amount as being fairly allocated to the particular parish, and to allow the deduction of a certain percentage on the capital so ascertained from the amount of the divisible net profit. The percentage was fixed at a sum considered to be sufficient to give the tenant interest on his money and a fair return on his capital for the risks undertaken and by way of profit on his adventure. The portion of the net profits which remained after this deduction was regarded as the rent which the hypothetical tenant would be prepared to pay, deducting the Statutory allowances thereon to arrive at the true rateable value.

Many Standards of Assessment

This method had many disadvantages. It involved calculations in parochial sections by many assessment committees at different times and on various data. The largest area subject to a single tribunal of appeal was a county, so that the standards of assessment applied to a single railway company might be as many as there were Quarter Sessions for the areas containing its undertaking. In many parishes the customary method of valuation gave negative values, but nevertheless nominal assessments were imposed and, as no abatement in the heavily assessed parishes was allowed for the nominal assessments, it followed that the sum of the assessments exceeded the value calculated as a whole. This system, which contained no machinery—such as had existed in Scotland since 1854—for valuing each railway undertaking as a whole, continued for England and Wales until the Railways (Valuation for Rating) Act, 1930, came into operation on April 1, 1931.

During the Government control of the railways from 1914 to 1921 no material change took place in the rating position of the companies, and on the grouping under the Railways Act, 1921, it was agreed to be impracticable to work the old machinery. Accordingly it was agreed with the local authorities that until legislation set up new machinery there should be a yearly adjustment of the rateable values broadly in proportion to the rise and fall of net receipts. This arrangement continued in force until March 31, 1931. Under it the net annual value of the four group companies taken together amounted to £10,340,000, namely L.M.S.R. £3,600,000, L.N.E.R. £2,600,000, G.W.R. £2,300,000, and Southern Railway £1,840,000. In 1913 some 120 companies which were subsequently amalgamated with or absorbed by the four groups paid a total of £16,485,000 in

rates, and the amounts paid by the individual groups into which they were formed were: L.M.S.R. £5,934,000; L.N.E.R. £4,701,000; G.W.R. £3,261,000; and Southern Railway £2,589,000.

On April 1, 1931, the Railways (Valuation for Rating) Act, 1930, came into force. This Statute re-enacted the principle contained in the Parochial Assessments Act, 1836, and the Rating & Valuation Act, 1925, and the annual value to a yearly tenant was thus applied to all classes of rateable property. It made Statutory net receipts the basis of the valuation of railways; and set up a new authority called the Railway Assessment Authority consisting of a chairman and nine other members. The duty of the Authority is to make quinquennial valuations of each railway as a whole, the first valuation to come into force on April 1, 1931, the second on April 1, 1936, and so on. The main difference created by the Act of 1930 has been that the value of the undertaking must be ascertained "as a whole" and then apportioned, instead of the attempt being made to ascertain the earning capacity of the railway in each parish, as was done previously. The new method also did away with the necessity of drawing a distinction between directly and indirectly productive parts of the undertaking and calculating the rateable value of the indirectly productive parts of the undertaking in each parish on the "contractor's basis."

Apportionment of *Cumulo* Value

The apportionment of the *cumulo* value (the valuation of the railway as a whole) is made under a scheme sanctioned by the Minister of Health. This value is apportioned to each hereditament or part of the undertaking of a company on a just estimate of the relative value which the hereditament or part has to the undertaking as a whole. To this end the undertaking is first divided into four parts:—(*a*) the principal undertaking (that is, broadly, the railway proper); (*b*) each canal undertaking; (*c*) each dock undertaking; and (*d*) each subsidiary undertaking. All these are called "constituent undertakings."

The first stage of apportionment is to divide the *cumulo* value among the several constituent undertakings in proportion to the estimated relative value of each such undertaking to the undertaking of the company as a whole. The net annual value of each constituent undertaking is then to be apportioned among the hereditaments thereof in proportion to the estimated relative values of those hereditaments to that constituent undertaking.

For apportioning the total net annual value allotted to the principal undertaking its hereditaments are subdivided into:—(i) Class A, comprising all the hereditaments consisting of "Land used only as a railway made under the powers of any Act of Parliament for public conveyance"; (ii) Class B, comprising all other hereditaments of the principal undertaking.

The block of net annual value allocated to Class A as a whole is further sub-divided between the "traffic element" and the "non-traffic element." The reason for this is that, in hereditaments consisting of "land used only as a railway," there are parts (*e.g.*, portions of platforms and other areas) over which no traffic is conveyed and as to which therefore volume or value of traffic affords no criterion of relative value. The traffic element of net annual value is allocated among the hereditaments of Class A in accordance with a just estimate of the gross receipts from traffic attributable to each such hereditament; these are estimated from the gross receipts attributable to convenient sections of line. The non-traffic element is allocated among the hereditaments of Class A in accordance with the relative value of each of them to the principal undertaking *otherwise than* from the gross receipts from traffic. The amount of net annual value allocated to Class B as a whole is divided among the hereditaments of that class in accordance with the relative value of each of them to the principal undertaking.

Basis of First Valuation

The basis of the first valuation was the average net receipts for 1928 and 1929 and that of the second valuation the average net receipts for 1930-1934 inclusive. The first valuation of the four companies by the Railway Assessment Authority and inserted in the draft valuation roll aggregated £13,480,000, made up of L.M.S.R. £5,000,000, L.N.E.R. £3,500,000, G.W.R. £2,800,000, and Southern Railway £2,180,000. The valuation of the Southern Railway was the first to be completed, and the figure of £2,180,000 was inserted in the draft roll. In framing it the Railway Assessment Authority did not adopt the "profits basis," and relied mainly on the language of Section 4 (2) of the Act of 1930 which provided that in estimating the rateable value as a whole the Authority should not be bound to give effect to any custom or practice affecting the valuation of railway hereditaments which obtained before the passing of the Act in regard to the deduction or allowance to be made in respect of the capital of a tenant, but should have regard to all material considerations with a view to securing that the estimated rent represents a fair and just division of the net receipts as between the landlord and the tenant. This subsection figured prominently in the appeals to the Railway & Canal Commission and subsequently to the House of Lords when the first valuation made by the Authority in respect of the Southern Railway was challenged by that company. Both Courts held that the direction to assess the rent by reference to the net receipts in accordance with the subsection of the Act could be achieved only by a proper application of what is called the profits basis, *i.e.*, based upon the three factors: (1) the tenant's capital, (2) the percentage to be allowed to him on that capital, and (3) the yearly net receipts to be earned by the tenant from the undertaking. The Railway & Canal Commission, however, reduced the estimated value of the tenant's capital by making a deduction for obsolescence and disallowing the former practice of adding to the cost of rolling stock manufactured by the company a percentage to represent manufacturer's profit, and a further addition which the company had made based upon the reduction of cost effected by mass production. In the result the Railway Assessment Authority's valuation of the Southern Railway was reduced from £2,180,000 to £1,077,131.

The valuation of the Southern Railway by the Railway & Canal Commission was arrived at as follows:—

	£	£	£
Average net receipts 1928-29			5,408,000
Tenant's capital	27,610,690		
15 per cent. thereon		4,141,603	
Receipts earned without employment of tenant's rolling stock:—			
(A) Pullman cars	559,048		
(B) Trains of Metropolitan District and London Midland & Scottish to Richmond & Wimbledon	91,362		
(C) Owners' wagons estimated at ...	1,000,000		
(D) "Rents from houses and lands" and "other rents"	242,258		
	£1,892,668		
Tenant's share, 10 per cent.		189,266	
Occupier's share or non-rateable profits of trade			4,330,869
Net annual value			£1,077,131

After the House of Lords' judgment and its confirmation of the valuation previously found by the Railway & Canal Commission, negotiations ensued with the other main-line companies, and the following net annual values were agreed for the First and Second Rolls:—

	1st Roll (1931-1936)	2nd Roll (1936-1941)
	£	£
S.R.	1,077,131 (Court)	1,150,000
G.W.R.	1,650,000	1,400,000
L.M.S.R.	1,750,000	1,500,000
L.N.E.R.	1,100,000	1,100,000
	5,577,131	5,150,000

In respect of the Third Roll period operating from April 1, 1941, and related to the net receipts for the five years ended December 31, 1939, the railway companies represented that the Second Roll figures should be continued for the Third Roll period. The increase in the net receipts was more than offset by the increase in the value of the tenant's capital, a detailed valuation of which during the war period presented insuperable difficulties. The Railway Assessment Authority was not able to agree to this proposal but eventually the following net annual values were agreed between the Authority and the main-line companies:—

	£
S.R.	1,339,806
G.W.R.	1,631,068
L.M.S.R.	1,747,573
L.N.E.R.	1,281,553
	6,000,000

At the end of 1943, however, the only part of the Third Roll which had been completed was in respect of the Southern Railway.

The accompanying table shows the variations in net annual value in certain selected years. The figures for 1913 were arrived at under the old parochial system; those for 1930 were under the provisional arrangements agreed with the local authorities; and the later figures explain themselves. Thousands are omitted.

	1913	1930	Railways (Valuation for Rating) Act, 1930		
			Draft Valuation Roll	First Valuation 1931-35	Second Valuation 1936-41
	£	£	£	£	£
L.M.S.R.	5,934	3,600	5,000	1,750	1,748
L.N.E.R.	4,701	2,600	3,500	1,100	1,281
G.W.R.	3,261	2,300	2,800	1,650	1,631
S.R.	2,589	1,840	2,180	1,077	1,340
	16,485	10,340	13,480	5,577	6,000

LETTERS TO THE EDITOR

(The Editor is not responsible for the opinions of correspondents)

Freight Working in the U.S.S.R.

London. May 20

TO THE EDITOR OF THE RAILWAY GAZETTE

SIR,—The article on freight working in the U.S.S.R., in *The Railway Gazette* of May 19, is very interesting, but in the first paragraph, page 521, it is stated:—

"Measures decided on included . . . . the installation on goods stock of continuous brake apparatus and automatic couplings."

Yet on page 522 there is reference to, and illustrations of, brakemen's shelters on wagons, which, with my limited experience of continental railways in the last war, I associated with non-continuous-braked trains.

Would you care to send this letter to your "Correspondent" for observations, if you think the point worth pursuing, and, if some indication could be given as to the extent to which continuous braking and automatic couplings on freight stock have been introduced in Russia, I suggest it would make interesting publication.

Yours faithfully,
"GOODS EXPRESS"

[See editorial note, page 562]

Repairing Railway Wagons

London Midland & Scottish Railway Company,
Bromsgrove Wagon Works,
Worcestershire. May 24

TO THE EDITOR OF THE RAILWAY GAZETTE

SIR,—The article appearing in *The Railway Gazette* of April 28 under the heading "The Repairing of Railway Wagons" will no doubt have given many readers the impression that little or no great thought is given to the problem of keeping the ordinary open-type wagon in service. Economy seems to be the main point under consideration. If there is any greater economy effected in the maintenance of any other form of vehicle than the railway wagon particulars would be of great interest. It is correct to say the slightest economies on individual wagons would reach staggering figures and this has been done in many ways, other than alteration in size of lettering.

The principles of wagon repairing are continually under review with the object of obtaining the greatest possible usage, and inspection of any number of wagons under repair will soon reveal the saving and economy in use of timber that is being effected.

There are many systems in use at various companies' depots for marking off defects that require attention and whether the stripping is done by a wagon repairer or any other grade of man he must be experienced, otherwise the damage done to timber would be far more costly than any slight reduction in the rate of the two grades mentioned.

The success of mixing new main timbers with old timbers is based on the experience and sound judgment of the marker off, whether he be called by the name Foreman, Examiner, or Inspector, and many old seasoned timbers are far better than present day new. At many main factories where general repairs are carried out, the work is done on a progressive system with the assistance of pneumatic and electric tools of all types, also pneumatic and electric lifting apparatus together with ramps and stages for various operations; the average time in shops is approximately 3½ to 4 days for a thorough general repair.

It can be agreed that many of the old wagon shops are obsolete and much could be done to improve the facilities, but this has not been overlooked and progressive layouts have been introduced at no little expense for dealing with the ordinary light repair, even during the war period, and there is no doubt that in the post-war period much more will be done.

Building new wagons on the ramp system is simplicity itself compared with the repair of wagons that have been in traffic for a number of years. The suggested remedy put forward is certainly revolutionary, but would it lead to economy? Certainly not at the present time. A wagon dealt with on similar lines to the suggestion and only in traffic for a little over a year required a new top due to the use of home-grown timber. It is not hard to visualize what a new wood frame would have been like.

It is stated the whole wagon would be completely stripped by unskilled labour. Surely this cannot be a serious suggestion. Timber, bolts, and ironwork, etc., are far too precious to disturb when in good condition and capable of many years' service. It is agreed by the author that damage is done during the stripping operation but adequate supervision prevents much of this taking place and trained Examiners are not supervisors.

It is noted sound main timber would be set aside to be transferred to outstations, although it is recognised as a bad practice to deal with main timbers at outstations, not only by the railway companies but also by private repair firms. The outstation job is to render first aid and keep the wagons moving. All good planking can be utilised at a general repair factory, and planks that in the past would have been put to scrap to-day are reconditioned and put to further service. If the foreman or examiners are properly trained and expert in judging the soundness of timber, there would appear no necessity for going to the expense of an entirely new underframe with the consequent damage to other timber and bolts, etc., when stripping.

When a wagon is so far gone as to warrant a new frame the practice is to condemn and replace with a new one, reclaiming all possible sound material for the repair of other wagons.

The answers to the four major factors put forward appear to be as follow:—

(*a*) There is no assurance that present day new main timbers would ensure full life of wagons within general repair period.

(*b*) Smaller depots would not require anything like the quantity of timber that would be available.

(*c*) Unskilled labour for stripping would be a bad practice and any saving in wages would be lost in damage to material.

(*d*) Ramp methods are already in operation at many depots.

It would appear the writer has based his remarks on the practice operating some years ago, and is not quite conversant with many improvements that have been effected to deal with the many complicated questions of wagon repairing in all its branches.

Yours faithfully,
T. R. HOWARD,
Works Manager

"Another Plan for Railways in London"

London Passenger Transport Board,
Temporary address: Griffith House,
280, Marylebone Road, N.W.1. May 24

TO THE EDITOR OF THE RAILWAY GAZETTE

SIR,—May I comment on your editorial note on page 485? I think there is a misunderstanding on the part of our "practical" people in their attitude towards "ideal" schemes.

I suggest that the "theoretician" is aware of the necessity to consult and work with the technician to a far greater extent than the "practical" man is equipped to appreciate the need for something more than girders and drains. Man does not live by bread alone!

As I see it, the proposals put forward by the Royal Academy are, as they necessarily must be, schemes for an ideal to be aimed at; they do not pretend to an exact knowledge of technical requirements, and it should be taken into account that the Royal Academy has received no mandate to consult the various Authorities concerned, but has voluntarily made its contribution towards this great opportunity.

Naturally there are points of ignorance and impracticabilities in these plans, but assessed in the right spirit they are a valuable illustration of what could be aimed at, and it is for the expert in his particular sphere of knowledge to co-operate and show that he also possesses an aspiration to leave London finer than he found it.

THOMAS BILBOW,
F.R.I.B.A., Acting Architect

THE HISTORY OF STANDARD TIME FOR MILITARY TRAFFIC.—Although the need was early recognised for at least a few well-defined zones in which uniform railway time was observed, many years elapsed before satisfactory arrangements were made on the European Continent; as a rule, the various countries adopted the times of their principal cities, which ensured uniformity within their own borders. The success in North America of Zone Time, fixed towards the end of 1883, encouraged further attempts to improve the position in Europe. In Germany, notwithstanding the establishment of Bismarck's Reich in 1871, each State adopted its own time, such as Karlsruhe time for Baden, Frankfort time for Hesse, Berlin time for the north and Alsace-Lorraine, and so on, which caused great confusion and difficulty for passengers and railway staffs alike. One of the most prominent advocates of reform in this matter was the old Field-Marshal Von Moltke, who argued, as might be expected, that five or six different railway times in the same country offered serious obstacles to the efficient working of military traffic, should the need arise. He strongly recommended the adoption of the meridian of Stargard and Görlitz, 15 degrees east of Greenwich, and shortly after, in 1891 and 1892, the German and Austro-Hungarian lines, one by one, officially based their standard time on it. This time, now widely known as Central European time (or M.E.Z., the initials of the German terms), became the legal time throughout Germany on April 1, 1893.

The Scrap Heap

G.W.R. Parcels to Forces

Some 1,600,000 cigarettes, 205,000 razor blades, 45,000 shaving sticks, and 50,000 books, were among the items in the 78,000 parcels which Great Western Railway employees have sent to colleagues serving in the Forces through the company's Comforts Fund since the outbreak of war.

* * *

From Merstham to Wandsworth ran one of the earliest tram roads in England. It was laid down (with stone sleepers) in 1801-5, and, of course, worked by horse haulage. It was used for conveying stone and lime to London; it eventually became the property of the Brighton Railway, and was pulled up by them.—*From "The Charm of Old Surrey," by H. M. Alderman.*

* * *

U.S. Railways and the Red Cross

During March, 34 American railways, including most of the principal Class 1 lines, co-operated with the American Red Cross in its drive to obtain a sum of $200,000,000 during 1944. The part played by the railways included poster displays at stations, attaching gummed slips to all menus in dining cars, and distributing thousands of postcards as propaganda to travellers in Pullman sleepers and in dining cars.

* * *

During the first two weeks of last January, over 200 persons were prosecuted in Cape Town for boarding or leaving moving trains in the suburban area. In most cases the courts imposed substantial fines. The South African Railways Administration resorted to legal action with reluctance, but was compelled to do so by the growing disregard for regulations primarily laid down for the protection of the public. In the last six months of 1943, five persons were killed, and 25 injured, as direct results of their having disobeyed the regulations in question.

* * *

The Daily Telegraph Prisoner-of-War Exhibition in aid of the Red Cross & St. John, which is being held in the grounds of Clarence House, presents a remarkable tribute to the ingenuity and resourcefulness of men held captive in Germany, who are intent on keeping mind and body active. Hours of patient labour have been spent in fashioning articles from scraps of wood, bone, metal and cloth with primitive tools.

Staff-Sergeant Trimmer and Sergeant Burbidge took fourteen sheets from cocoa tins, out of which they made the L.N.E.R. locomotive, tender and coach, and the rails, shown in the accompanying illustration. The wheels were made from tinfoil, melted down and moulded. A poster, "Southern Electric," by Sergeant F. B. Taylor, suggests happy days to come, as does that of Sergeant F. E. Davies dealing with holidays in Switzerland. Sergeant J. T. D. Old has made the Orient Line the subject of his poster.

* * *

"Why is this station so far from the town?" said the belated traveller.

"Never thought about that, sir," replied the porter. "We reckons it's 'andy to 'ave it near the railway."—*From "Carry On."*

* * *

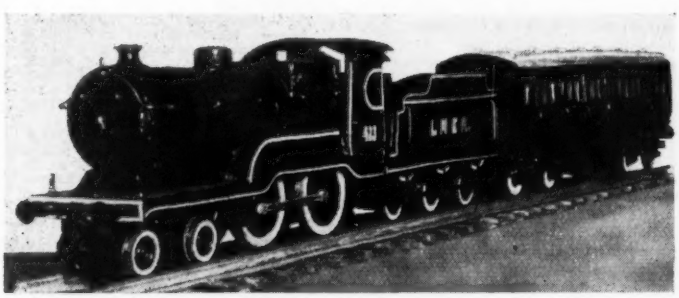
Corrections in "Hansard"

A question in the Commons recently about how far members were allowed to correct the reports of their speeches for final appearance in "Hansard" brought interesting light on the limits of correction and the occasional desire to exceed them. The position is still as it was defined by Mr. Speaker Lowther in April, 1914; briefly stated, a member may legitimately seek to polish his grammar and his style but he must not try to alter the substance of what he said. The final authority on any of the nicer points involved is still the Speaker, whom the editor of "Hansard" consults on the basis of the 1914 ruling. The Speaker has arranged for an extract from that ruling to be printed inside the cover of the daily "Hansard" in order to assist members and "serve as a reminder of those who are rather in the habit of what I might say amounts almost to rewriting their speeches." Even if the sense remained the same an exercise of that extent is obviously to be discouraged; we cannot have the spontaneity of "Hansard," which is one of its charms, polished out of existence for the sake of a cascade of studied eloquence that was never uttered. Nor could the Speaker oblige the M.P. who not only wanted to put in a new sentence but to add after it "Loud cheers from the members."—*From "The Manchester Guardian."*

* * *

Inter-Communications

A demonstration of the efficiency, despite five years of war, of the country's inter-communication system, was given by an exchange of messages on May 9 between a Manchester office of the L.N.E.R. and the Press Relations Office at the company's headquarters. The message was handed in to the telegraph office of the London Road Station, Manchester, L.N.E.R., at 4.10 p.m. At 4.16 p.m. the telegram was time-signed as dispatched by teleprinter. At 4.20 p.m. the G.P.O. telephone connected to Central Exchange rang in the Manchester office; the call was from headquarters to give a reply to the query raised in the teleprinter message transmitted from Manchester at 4.16.



* * *

"Now for some fun and games—they've left it to me this morning"—by Neb

[From "The Daily Mail"

* * *

Rail Cut Methods Criticised

The sudden, but not unexpected, "cutting" of main-line trains and, in some cases, suburban trains chiefly used by war workers, was a decision of the Ministry of War Transport.

Although much inconvenience has been caused, people will accept such hardships in the greater interest of victory. There is, however, a feeling among M.Ps that the question of train cuts could be handled better if it were left under the control of the railway companies.

They feel that a Departmental edict which allows no possible latitude is not the same thing as an organised plan run by railway operators who, while fulfilling all essential requirements, still make some provision for those who are compelled to travel.

At the same time, the prospects for travel at Whitsun become more and more difficult, and the greater number of people who stay at home the better it will be for the railways.—*"The Daily Sketch" Political Correspondent, May 25.*

* * *

Tailpiece

(*The new C.N.R. Central Station at Montreal is a notable achievement*)

What years of progress lie between
The track-side stations of the West
And this that rises new and clean,
Canada's newest, biggest, best;
Developing from fall to fall,
The Central Station, Montreal.

Here flourish for the pilgrim's need
Those services that smooth his way,
Those aids to comfort, aids to speed,
Amenities that seem to say
In chorus in approach and hall,
"Passengers first at Montreal!"

It nears completion, and it shows
On platform and in concourse floor,
In restaurant and office rows,
An ample plan, a choice decor,
With all amenities at call,
O Canada, at Montreal.

E. C.

OVERSEAS RAILWAY AFFAIRS

(From our correspondents)

INDIA

Reductions in Train Services

Due to acute shortage of coal, the North Western Railway has discontinued the running of 71 passenger trains, of which 32 represented main-line services. Sir Arthur Griffin, General Manager, N.W.R., stated on February 10 that they would be restored gradually as the coal situation improved. Goods services had had to be cut down also, but the export of food grains to provinces in need would not be affected. There was no intention of further curtailment of services. He added that in 1942 a reduction in services of 25 per cent. compared with the pre-war period had been made, also on account of coal shortage.

Locomotive Building

The Council of State has passed without division a resolution recommending the manufacture of broad-gauge locomotives in India. Sir S. N. Roy, Secretary, War Transport Department, said that the Government was proceeding with the scheme, but that there were difficulties in obtaining the necessary machinery and tools. He added that, although the Government might find later that locomotive manufacture had again become uneconomic, because of large imports of engines, it was committed to the scheme, with which it would proceed.

Sir Edward Benthall, War Transport Member, said it might take 2½ years to complete the first locomotive after setting up a factory; and he wondered whether, in view of the importance of efficient transport in India at the present time, Great Britain or the U.S.A. would prefer to supply plant for locomotive construction in 2½ years' time, or immediately to provide the engines themselves. He referred to a scheme for building locomotives at Kanchrapara, for which the blue prints were almost complete; the Government also was negotiating with a private firm for the construction of locomotive boilers during the war.

UNITED STATES

False Clear Signal Failures

Figures quoted in the American press from the report of the Director of the Bureau of Safety, Mr. S. N. Mills, to the Interstate Commerce Commission show how many false clear operations of signals and associated equipment occurred during the twelve months ended June 30, 1943. The greater number, as would be supposed in view of the considerable mileage of line equipped with automatic signals, appears under the heading of block systems and amounts to 146, compared with 129 in 1942. There were 68 such failures in interlocking areas (against 71), and 35 attributable to A.T.C., cab signals or train-stop mechanisms (against 22 in the previous year). Dangerous failures of miscellaneous apparatus were only six. The total was therefore 255, compared with 223 in 1942. Figures for 1940 and 1941 were 276 and 233.

The largest number (15) of false clears in block signal equipment occurred on the Southern Pacific; the second largest was ten, on the Chicago, Burlington & Quincy Railroad. Twelve lines experienced none at all. These figures are small compared with the considerable number of signal and train movements that must be involved. Nothing can eliminate false clears, but it is interesting to note that it is not, and practically has never been, the custom in America to provide proving circuits (as they are known in Great Britain) to cover the possibility of an automatic signal remaining at clear behind a train. It is not considered worth while to complicate the circuits to meet a contingency held to be remote, although certain possible sources of false clears, such as broken-down insulated joints, are protected against by the employment of suitable circuit layouts in some instances. Right side failures in the year under review amounted to 44,407.

End of the 2-ft. Gauge

By the recent closing of the 6-mile Monson Railroad in the State of Maine, recorded in the April 14 issue of *The Railway Gazette*, succeeding that of the Bridgton & Harrison and the Sandy River lines, it is believed that the last of the 2-ft. gauge railways in the United States has gone out of business. Latterly the Monson Railroad had been kept alive only by the carriage of slate; but the owners, the Monson Slate Company, finally transferred their traffic to road lorries, and no further purpose remained in keeping the railway open.

Another Transverse Fissure Derailment

Another serious derailment has taken place in the United States due to an undetected transverse fissure in a rail, and again a diesel-hauled streamliner was involved. This was the Sun Queen of the Seaboard Air Line Railway, running between Florida coast resorts and New York; and the site of the derailment, which took place on December 12 last, was Seals, Georgia, 41½ miles north of Jacksonville, Florida. The train was travelling at 75 m.p.h., when the fourth of fourteen coaches left the road, and all from the fourth to the thirteenth inclusive were derailed, with the result that two passengers were killed, and 36 persons were injured. The locomotive and the leading vehicle stopped 2,100 ft. ahead of the point of derailment, and the second and third coaches about 1,000 ft. in rear of the first; the fourth carriage, though off the track, remained coupled to the third, and the remainder came to rest in various positions.

The rail which caused the derailment had broken into ten pieces, at eight of which transverse fissures were revealed; the worst of these, and the one assumed to have caused the first breakage, extended to 80 per cent. of the rail-head. The track had been relaid with 100-lb. rail in 1931, and the last previous patrol of a Sperry detector car was on May 3, 1943.

Result of Fireman's Inexperience

The risks of a railway operation by men but partially trained are well illustrated by an accident which occurred on November 26, 1943, on the joint line of the Atchison, Topeka & Santa Fe Railway System and Union Pacific Railroad which leads to Cajon Pass summit in California. The accident occurred 10½ miles north of San Bernardino, on double line equipped with automatic block signals. First No. 208 of the Union Pacific, with two steam locomotives and 16 all-steel passenger coaches, was moving on the eastbound track at 25 m.p.h. up a 45 gradient past Devore, when the eighth vehicle, a dining car, was struck a glancing blow by a Santa Fe locomotive which had been allowed to take a crossover leading from the westbound to the eastbound track; 49 passengers and employees were injured.

The accident was caused by an inexperienced fireman, who in the darkness (the time was 9.55 p.m.) mistook the functions of several hand-operated switch levers at this point, and inadvertently threw one which both opened the crossover and simultaneously closed a derail that would have prevented the collision. It appeared that this fireman had had only six months' experience in all on the railway, and had never received any proper instruction in respect of the operation of derails in connection with siding switches. The report of the Interstate Commerce Commission on the collision strongly recommends the installation over this section of electric switch-locking, which would make an accident of this description impossible.

Rail Abandonment Applications

The Missouri-Kansas-Texas Railroad, the lessee, and the Texas Central, the owner of a 42-mile branch from De Leon to Cross Plains, Texas, have been authorised by the Interstate Commerce Commission to abandon the line; and the I.C.C. is recommended also by its examiner to authorise the M.-K.-T.R. to abandon a 14-mile line from Walker to Excelsior Springs, Missouri. Applications denied by the I.C.C., however, have been by the Chicago & North Western Railway to close 14½ miles of line from Blunt to Onida, South Dakota; by the Missouri Pacific Railroad to abandon 25 miles from Talmage to Weeping Water, Nebraska; and by the Northern Pacific Railway to abandon 21 miles from Wyoming to Taylors Falls, Minnesota and 17 miles from Rush City, Minnesota, to Grantsburg, Wisconsin. It is evident that the Interstate Commerce Commission is not granting closure applications as readily as heretofore.

SWITZERLAND

Fribourgeois Lines

In the table below are given comparative results of working for 1941 and 1942 (the last year of separate existence) of the lines comprising the system which was formed on January 1, 1943, when, as the result of merger, the Chemins de fer Fribourgeois Gruyère-Fribourg-Morat came into being. Some details of the merger were given in *The Railway Gazette* of October 8 last.

	1942	1941
Fribourg—Morat—Anet line		
Passengers carried	644,537	597,270
Passenger receipts (fr.) ...	444,870	406,680
Goods conveyed (*tonnes*) ...	67,342	73,323
Goods receipts (fr.)	223,320	241,730
Total working receipts (fr.) ...	757,320	716,920
Working expenditure fr.) ...	637,200	594,290
Working surplus (fr.) ...	120,120	122,630
Gruyère system		
Passengers carried	1,120,000	1,100,000
Passenger receipts (fr.) ...	731,850	730,120
Goods conveyed (*tonnes*) ...	51,992	60,386
Goods receipts (fr.)	338,320	396,530
Total working receipts (fr.) ...	1,210,000	1,270,000
Working expenditure (fr.) ...	836,320	788,940
Working surplus (fr.)	373,680	481,060
Bulle—Romont line		
Passengers carried	172,265	145,269
Passenger receipts (fr.) ...	163,370	160,570
Goods conveyed (*tonnes*) ...	67,234	63,102
Goods receipts (fr.)	282,690	309,750
Total working receipts (fr.) ...	552,530	572,140
Working expenditure (fr.) ...	511,050	403,450
Working surplus (fr.)	41,480	168,690

The road passenger services operated by the Chemins de fer Fribourgeois in Canton Fribourg showed working receipts for 1942 of fr. 887,150, against fr. 782,530 in 1941. Working expenditure amounted to fr. 487,810 (fr. 408,590), and the working surplus was fr. 399,340 (fr. 373,940). Receipts from the operation of road goods services during 1942 amounted to fr. 177,810, against fr. 176,670 for 1941. Working expenditure was fr. 145,710 (fr. 169,370), and the working surplus was fr. 32,100 (fr. 7,300).

Condensing Locomotives

Summary of paper by Professor G. V. Lomonossoff, Dr. Ing., and Captain G. Lomonossoff, R.E.M.E., and of the ensuing discussion*

IN the year 1763, James Watt introduced the idea of condensing equipment, which was rapidly adopted for both marine and stationary steam plant. It was not until 1848, however, that the first attempt to apply full condensation to locomotives was made by Sir W. G. Armstrong & Co. Ltd.; but this engine failed to find a purchaser. The next attempt at condensation was made by the Hunslet Engine Co. Ltd., which built five locomotives for the Sudan in 1895. From the information received, they appear to have been equipped, not for full, but for partial condensation, as they were fitted with a valve which allowed the exhaust steam to go either into the blast pipe or into the condenser, at will. These engines never ran with the condenser in use.

About the year 1906, Mr. Ramsay renewed the attempts to apply full condensation to locomotives. The first locomotive embodying his ideas was built by the North British Locomotive Co. Ltd. in 1910, and the second by Armstrong, Whitworth & Co. Ltd. in 1920. Both these engines had Parsons turbines as prime movers and electric transmission to the driving wheels; whilst the second locomotive had a rotating condenser. The third "turbo-electro-locomotive" was built by the General Electric Company in 1937 for the Union Pacific Railroad, where it is known as the "Steamotive." Its boiler pressure is 1,500 lb. per sq. in., and the output of the main turbines is 5,000 h.p.

In 1921, the Swiss Locomotive Works, Winterthur, built a 1,200 h.p. locomotive for the Swiss Federal Railways, with a Zoelly impulse turbine and gear transmission, and in 1924 Krupps built a similar, but more powerful, turbine locomotive. In both these engines the water condenser is on the locomotive, and the tender is equipped with a "tower" in which a special arrangement of tubes gives great evaporative surface. The Krupp locomotive was reconstructed in 1927, and then showed a saving of 17 per cent. in coal compared with ordinary locomotives.

The first Ljungström locomotive was built by Brothers Ljungström Company (Stockholm) in 1921 for the Swedish State Railways; it was unsuccessful, but a second Ljungström locomotive was built in 1924 by Nydqvist & Holm (Trollhattan) for Argentina, and a saving of 13 per cent. in fuel was achieved. In 1926, Beyer, Peacock & Co. Ltd. built the third Ljungström locomotive, which was tested on the L.M.S.R., and the fourth locomotive of this kind, which is similar to the third, has been working on the Swedish State Railways since 1927.

In 1924 the North British Locomotive Co. Ltd. exhibited the Reid MacLeod turbo-locomotive at Wembley; this design included an evaporative condenser. Five years later the Munich firm of Maffei completed an experimental locomotive, which had passed through various stages of development during the eight preceding years. It had two main impulse turbines (one for forward running and the other for reverse) and a water condenser. A vacuum of between 26 and 27 in. of mercury is attained, with a saving in coal of about 25 per cent.

A reciprocating locomotive with full condensation, but without any vacuum, was ordered from the Henschel Company (Kassel) for the Argentine State Railways in 1927 and delivered in 1931. In January, 1932, its official tests began. This is the hottest season in the Argentine, when the temperature reaches 132° F. Nevertheless the locomotive worked satisfactorily, on one occasion for 109 hours without interruption, and always managed to do a trip of 475 miles without rewatering; but the fuel oil consumption was only slightly less than for ordinary locomotives of similar power.

In 1933 the Soviet Government decided to equip one of its normal 0-10-0 steam locomotives with a condenser, so a locomotive of that type which had been built by Henschel in 1922 was returned to the maker's works for the necessary modification. The aim of this reconstruction was only to save water, and there was no intention of reducing the fuel consumption. Because of the good results obtained with this locomotive it was decided to build several 2-10-0 locomotives with condensing apparatus. The first of these was ready in the autumn of 1936. According to recent information, locomotives of this class show an economy up to 20 per cent. in coal, compared with the similar non-condensing type, and have proved themselves extremely useful under war conditions.

Chief Advantages

In comparison with diesel locomotives, the advantages claimed for condensing locomotives are: (1) their initial cost is much lower; (2) they can work on any fuel; and (3) they have fewer details unknown in railway practice and requiring new methods of maintenance.

In the Henschel type of condensing equipment in use in Russia and the Argentine, the exhaust steam from the cylinders is directed through an oil separator into an auxiliary turbine which drives the cooling fans. From this turbine the steam goes into the elements of the condenser, passing thence, as condensate, into the hotwell, from which it flows into "clean tanks." This arrangement enables the condensate from the auxiliaries to be collected, and also permits the de-aeration of the whole of the condensate by the steam ejector. From the "clean tanks" the condensed water is returned by a feed pump to the boiler. The slight losses due to leakage are made good by the supply of raw water, carried in an additional tank; this water is, however, not led into the boiler directly, but through an evaporator, the steam from which is also condensed. By this arrangement the condensate is kept perfectly clean. Draught is produced by a special turbine-driven fan, as there is no blast pipe. The paper shows that quite reliable condensing locomotives, losing no water, can now be built for hot countries; but practically no saving in fuel is attained with these types. On the other hand, there is a fairly satisfactory turbine locomotive—the Maffei type—with which considerable fuel economy can be realised in temperate climates; this type does lose water. Ljungström's attempt to create a condensing locomotive losing no water and yet, like a ship, able to work economically in all climates, failed, as it was obvious that it would.

Railway conditions are much less favourable for condensing than those of stationary engine or marine practice. The volume and weight of the condensing equipment in locomotives is much more restricted than in ships and power stations. In particular, the cooling surface is limited by the axle load and the loading gauge. For an 8-wheel tender, even under Russian conditions, a cooling surface of 30,000 sq. ft. is a practical maximum. For this country the corresponding maximum is about 22,000 sq. ft.; although for a 12-wheel tender it could be taken as 30,000 sq. ft. According to marine practice, such a cooling surface corresponds to an engine of about 24,000 h.p., whereas the power output of modern locomotives is only some 2,000-4,000 h.p. Ships move through water, which is an excellent cooling medium, whereas locomotives move through air, which is a very bad cooling medium. For this reason some condensing locomotives use water condensers instead of air condensers; in such cases the cooling water must be carried on the locomotive and recooled by air.

Thus in all condensing locomotives, as in diesel locomotives, air is eventually the cooling medium. This fact increases considerably the area of cooling surface required per horse-power, and also makes the effectiveness of condensation dependent upon the atmospheric temperature, which thus becomes a limiting factor in the output (in horse-power developed at the rail) of any condensing locomotive.

The total heat which can be absorbed in the cooling circuit is shown to have a simple relationship to the output (in horse-power) of the locomotive; the latter is made up of the useful power developed at the rail and the power absorbed by the various auxiliaries. The authors then proceed to their basic equation, which equates the heat absorbed in the cooling circuit to the product of the surface area of the condenser, the difference in temperature between the cooled substance and the ingoing air, and the generalised coefficient of heat transfer. The last-mentioned factor has a best value of 12 B.Th.U. per sq. ft. per hr. per ° F. for dry air. For a useful output of 2,500 h.p. at the rail a condensing surface of 30,000 sq. ft. would be required. This would necessitate a temperature difference of 100 ° F. between the cooled substance and the ingoing air.

It is difficult to realise in an air condenser a vacuum of more than 26 in. of mercury, which corresponds to a back pressure of 2 lb. per sq. in. and a condensate temperature of 126 ° F. It would therefore be necessary for the atmospheric temperature to drop to 26 ° F.—below freezing point—for the requisite 100 ° F. temperature difference (mentioned above) to be realised. With the usual summer temperature of about 86 ° F. in this country, a 30,000 sq. ft. condenser would not suit any higher horse-power than 1,000 at the rail, which is insufficient for general conditions.

Even supposing that a vacuum exceeding 26 in. of mercury could be achieved, it would increase the efficiency of a *reciprocating* locomotive very little, for the extra energy turned into useful work (which the authors represent as an additional area gained on the temperature-entropy diagram) that is recovered by lowering the temperature of condensation, is so very small. The complete degree of expansion (Rankine cycle) that is desirable can be attained only in turbines. So if the intention is to make use of full condensation to effect a considerable reduction in fuel consumption, a turbine is inevitable.

Taking the atmospheric conditions prevailing in this country, if a vacuum of about 26 in. of mercury and a horse-power at the rail of over 1,000 is required, the value of the generalised coefficient of heat transfer must be increased beyond 12 B.Th.U. per sq. ft. per hr. per ° F. This can be done either by increasing the velocity of the cooling air (by augmenting

* Read before the Institution of Mechanical Engineers in London on May 19

the capacity of the fans) or by wetting the cooling air.

The number and the dimensions of the fans, however, are restricted by the loading gauge, so that an increase in their capacity must be principally brought about by increasing their speed. This in turn will send up the power absorbed by the auxiliaries, a figure almost proportional to the cube of the fan speed. Humidification of the cooling air, on the other hand, permits a decrease both in the cooling surface of the condenser and also in the capacity of the fans. By this means alone, therefore, can a turbine locomotive of, say, 3,000 h.p., with one tender and an overall efficiency of about 20 per cent., be constructed for this country. Wet condensers, however, do lose water, although this fact has no practical importance if water supplies are adequate. Thus in designing a condensing locomotive to work in this country it is only permissible to stipulate that it should consume no more water than ordinary locomotives.

Such a solution cannot be recommended for waterless countries, least of all for those in which new lines are being built. For such conditions, the requirement that the locomotive should lose no water is of paramount importance. Unfortunately, waterless countries are usually hot countries, where the atmospheric temperature may reach 122° F. This condition, coupled with a condensate temperature of 126° F. (corresponding to a vacuum of 26 in. of mercury) would limit the maximum horsepower at the rail to a mere 100 h.p. That is why the Henschel-built condensing locomotives for the Argentine and Russia are arranged to work without any vacuum. As locomotives for colonial railways must be as simple as possible, a reciprocating locomotive arranged to condense without vacuum is to be preferred.

Points from the Discussion

Sir Richard W. Allen (Past-President), in the ensuing discussion, said he thought that the paper was opportune in directing attention to fuel economy as well as the conservation of water supplies, particularly in country districts where there was now a great shortage. If the Government would be persuaded to make a grant in aid of research on the subject, the opportunity could be found for carrying out the additional investigations required before any important developments could take place.

Mr. O. V. S. Bulleid said that a major criticism of the ordinary steam locomotive was its lack of availability, a fundamental cause of which was the use of raw water in the boiler, which caused the locomotive to be out of service for about 12 per cent. of its time. Anything which could be done to increase the availability of what was, after all, the best traction machine at our disposal, was therefore worthy of consideration. The very variable operating conditions, however, practically precluded any hope of reducing, by condensing equipment, the coal consumption substantially below something of the order of 50 lb. per mile.

Sir William Stanier, F.R.S. (Past-President), considered that conditions in this country were too variable to enable turbine locomotives to work efficiently. The non-condensing Turbomotive on the L.M.S.R. had a coal consumption per drawbar h.p.-hour much the same as the four-cylinder locomotives on work of the same nature. There was practically no difference, either, in the water consumption and the evaporation per pound of coal. With the condensing arrangement, the difficulties so far experienced in this country were usually mechanical; the condenser gave more trouble than the engine and the turbine. In Russia the difficulty seemed to have been overcome with the Henschel equipment. The height of the cross-section in that case was about 14 ft. 6 in., and if, to avoid that height, a condensing tender was made longer for the British loading gauge, there would be difficulty in accommodating it within normal limits.

Mr. B. Pochobradsky referred to the authors' statement that condensing locomotives could be developed either (1) to save water or (2) to save fuel. On the first type he had no criticism; but when, in respect to the second type, the authors stated that "for an ideal engine working in accordance with the Rankine cycle, condensation may enable a fuel economy of about 50 per cent. to be achieved," he considered such a claim to be quite inadmissible. He had made certain assumptions of steam temperature, absolute back pressure and heat content of feed water, and had plotted comparative theoretical heat-consumption curves for both non-condensing and condensing engines, working on the Rankine cycle, for a range of pressures from 150 to 2,000 lb. per sq. in. Having established the theoretical consumption of condensing and non-condensing engines, he deduced the percentage saving in fuel which the condensing engine would give; at 150 lb. per sq. in. that saving was 35 per cent., but it fell off with increasing pressure and at 300 lb. per sq. in. was only 29·8 per cent. Practical considerations showed that these figures would actually be much lower. Assuming an absorbing efficiency of 85 per cent. (which was higher than the paper suggested), the highest saving in fuel was 23·5 per cent. at 150 lb. per sq. in., whilst at 300 lb. per sq. in. it was only 17·5 per cent. Tests confirmed this.

Mr. E. S. Cox observed that two of the condensing locomotives mentioned in the paper were tried on the L.M.S.R. The first of these was the second Ramsay locomotive, which was of the 2-6-0 + 0-6-2 type, with four 275 h.p. traction motors. The engine far exceeded its designed weight, and so was confined to a 25-mile stretch of line between Horwich and Southport. The forced draught system was defective, and the condenser failed to produce a vacuum greater than 20 in. of mercury. After some improvements had been made, further trials were conducted, but the performance of this 155-ton engine at no time exceeded that of the ordinary 56-ton 2-4-2 tank engines which carried the local traffic.

The second condensing locomotive to run on the L.M.S.R. was the Ljungström locomotive built by Beyer, Peacock & Co. Ltd., which was a much more practical venture, and ran for a while on regular expresses between Manchester and London. On a test run from Derby to Bedford, a maximum speed of 76 m.p.h. and 1,200 drawbar h.p. were attained. The coal consumption, however, was 57 lb. per mile and 5·6 lb. per d.b.h.p., because of poor combustion and failure to maintain the vacuum. Further modifications were made, and in 1928 dynamometer tests were undertaken between Leeds and London, against a standard 2-6-0 engine. The fuel consumption was 3·15 lb. per d.b.h.p.-hr. for the standard engine, against 3·28 lb. for the Ljungström, and the water used was 42·5 gal. per mile for the standard engine and 6·8 gal. per mile for the Ljungström.

Three lessons emerged from these trials. First, a condensing locomotive needed an effective substitute for the automatic relationship between power output and steam production provided by the blast pipe in the ordinary locomotive. Second, means must be found to ensure that additional steam demands were not made on the boiler due to a periodical drop in the vacuum. Third, the many auxiliaries inseparable from a turbine condensing installation must be reliable.

Major William Gregson (Vice-President) gave some additional information about the turbo-electro-locomotive [Steamotive] for the Union Pacific Railroad. Completely automatic control was provided for the boiler, which had a combustion chamber made up of tubes, forming an entirely water-cooled firebox. The feed pump also acted as the circulating pump, and so was given a capacity 5-10 per cent. greater than the evaporation of the boiler. For a boiler of that type, of course, nothing but condensate could be used as feed water. The weight of the unit, based on the highest evaporation (45,000 lb. per hour) and including the automatic controls and self-starting arrangement was 0·88 lb. of boiler weight per lb. of steam.

Mr. H. W. Puttick referred to conditions in typical waterless regions on the North Western Railway of India. In the South-West Punjab, Sind, and Baluchistan, water supplies were precarious, and the quality very bad; the life of a locomotive boiler was 17 years, and of a firebox 8½ years. On many trains it was necessary for water tank wagons to be attached to enable the locomotive to complete its trip. There was thus a very great potential demand for a condensing locomotive, provided that it was reliable. The high temperature of the atmosphere ruled out any possibility of trying a turbine locomotive, but a condensing reciprocating locomotive could both reduce the boiler maintenance costs and also increase the pay-load hauled.

Mr. H. Holcroft described a novel form of condensing applied to S.R. locomotive No. 816A (now 1816) some 15 years ago. No information was disclosed at the time, but with the expiry of the patent rights, and for other reasons, details could now be given. It had been his task to collaborate with the consulting engineer of the company owning the patent rights in producing a practical scheme. Exhaust steam from the cylinders passed through an oil separator on its way to a multitubular cooler, from which it was discharged as feed to the boiler, being dealt with by a three-throw combined compressor and feed pump. The working fluid was thus operating on a closed circuit. Water carried in the tender was fed to the cooler, where it was evaporated at 212° F. under atmospheric pressure. An induced draught fan was provided in place of the blast pipe. This fan, of the propeller type, was carried on the smokebox door and was directly driven by a rotary steam engine of the radial type having a fixed cut-off of 25 per cent., and which was self-starting because of the multiplicity of cylinders.

After two or three years' desultory running the condensing apparatus was removed and the engine released to ordinary duties. Most of the troubles encountered were due to the draught fan, for which the steam pressure, originally limited to 160 lb. per sq. in. by a reducing valve, had to be raised to the boiler pressure, 200 lb. per sq. in., so that there was no reserve. If the boiler pressure fell off, so did the fan speed; the effect was cumulative, and things went from bad to worse with the lengthening of the locomotive cut-off. The rotary engine was redesigned, to include 2-to-1 gearing between engine and fan, but the arrangement was unsatisfactory. The eventual substitution of an impulse turbine for the rotary engine sent up the steam consumption to an even higher figure. Water hammer in the delivery pipes of the compression pumps gave some trouble, which was afterwards cured; but high back-pressures, probably due to the formation of air-steam

(*Continued on page* 581)

The New C.N.R. Station at Montreal—I

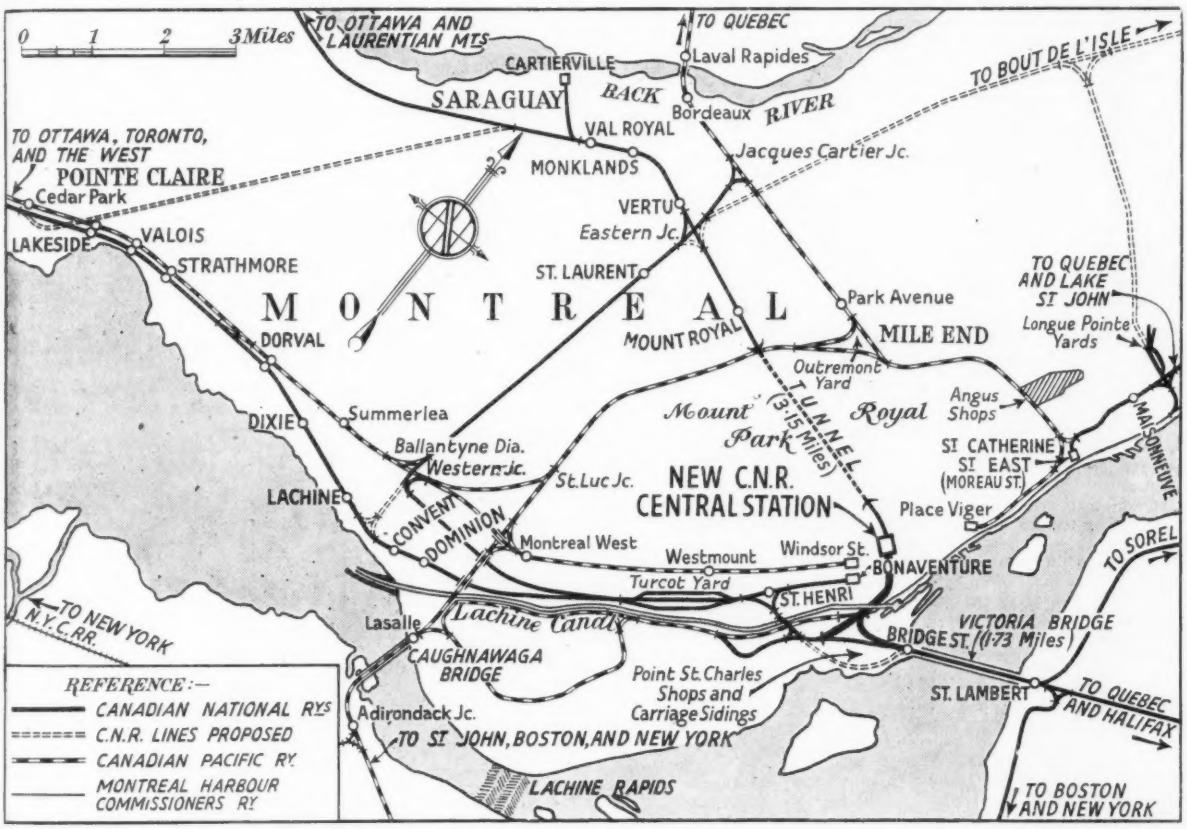
Site adopted—Original proposals, including extensive connecting lines—Suspension of work and resumption on modified scale—Grade separation

THE provision of the new Central Station in Montreal of the Canadian National Railways is an event of major interest to railway executives everywhere, and a brief description of the facilities already brought into use may best be divided into three parts. The historical background of the scheme is outlined in an editorial article in this issue (page 564), and it is enough here to record that the location finally selected was that of the dead-end terminal station of the former Canadian Northern Railway, called the Tunnel Station, which was immediately east of the portal of the 3·15-mile double-track tunnel under Mount Royal. An essential feature of the scheme is the conversion of the old dead-end station to a through one, by the construction of an extensive series of viaducts eastwards over the city streets towards the St. Lawrence River. This provides direct connection between the new station and the main line of the Canadian National Railways leading to the Montreal end of the great Victoria Bridge in the neighbourhood of Point St. Charles, which is the area of the railway repair shops and yards. All train operations over the approaches to the station, and in the station area, are by electric locomotives.

The accompanying sketch map clearly indicates the location of the new Central Station and its connecting lines, as well as the important approach lines which were included in the original plan, but have not so far been built. In planning the new facilities, full use has been made of the geographical advantages, not least of which is the fact that the Canadian Northern tunnel through Mount Royal reaches the city at a level which is different by only a few inches from that of the rail level of Victoria Bridge. Moreover, the tracks at the south end of the tunnel are 20-50 ft. below the general level of the surrounding property, thereby affording a situation conducive to overhead development, by the eventual leasing of what in North America are termed the "air rights" of the site, for the construction of hotels, theatres, office buildings, and so forth. Eastward of the station site the ground falls away so conveniently as to have made possible a level railway some 18-25 ft. above the intersecting streets, carried on a viaduct.

Excavation work on the site of the new Central passenger station was begun on September 15, 1930, and a bridge was built to carry Dorchester Street across the site. This bridge, which widened the street from 64 ft. to 104 ft., was opened for traffic on November 15, 1931. Considerable progress was also made in the contruction of the viaduct extending in a southerly direction from the station site. For a distance of about 1,900 ft. from the station this was designed as a reinforced-concrete viaduct with the tracks carried across all intersecting streets on steel bridge spans. Although it was made of sufficient width, namely 108 ft., to carry eight tracks, it was contemplated that at first only six tracks would be laid on the viaduct.

When the depression of 1931 resulted in the decision to suspend all work on October 15 of that year, a total of about 4,000,000 cu. yd. of material had been removed from the station site, and the greater portion of the concrete viaduct had been completed. During 1933, the space under this structure was fitted up for use as offices, and the personnel of the various departments of the railway, then occupying 14 different premises, many of them rented space in office buildings, was transferred to the viaduct offices, where, in the interests of health and comfort, a complete air-conditioning system was installed. It is estimated that the use of the viaduct space for offices is resulting in a saving to the railway of about $170,000 per annum.



Map of the railways in the neighbourhood of Montreal showing newly-built link lines to the south of the new Central Station, and proposed loop lines behind Mount Royal

Proposed Connecting Lines

The original intention was that this viaduct should be used only to provide a link between the new station and Victoria Bridge. The old Bonaventure Station was to be abandoned for passenger services, and its traffic conveyed to the new station by means of a new 6-mile cut-off between Pointe Claire and Saraguay, and thence

via the Mount Royal Tunnel. Passenger trains from the east, using St. Catherine Street East Station (often called unofficially Moreau Street Station) were to reach the new station over a new 10-mile loop line behind Mount Royal to Eastern Junction, and thence also *via* the Mount Royal Tunnel. This loop line would serve the even more important function of providing access from the east to the goods yards and lines in the vicinity of Turcot Yard and Point St. Charles without using the short physical connection of the Montreal Harbour Commissioners Railway, which handles such a large volume of its own traffic as to delay seriously any through vehicles.

The Canadian Parliament included authority for these new lines in the approval it gave, as long ago as June, 1929, to the scheme, and most of the necessary land between Pointe Claire and Saraguay, and between Eastern Junction and Longue Point (as well as an extension from the latter loop to Bout de l'Isle) has since been bought. The original plan was described and illustrated in *The Railway Gazette* of November 30, 1934. When work on the scheme was resumed in 1939, after an eight-year suspension, various details were modified—at any rate temporarily—during wartime.

The new station has been built substantially as planned, but deferring much of the site development. For the present, it replaces only two of the existing stations (Tunnel and Bonaventure), as the connecting approach railways behind Mount Royal were not included in the immediate work, although construction is now being undertaken on the Eastern Junction to Bout de l'Isle line. The St. Catherine Street East Station and its traffic are thus left unaffected for the time being. For traffic using the old Bonaventure Station, an entirely different form of access to the Central Station has been provided, in the form of a short connection in the neighbourhood of Point St. Charles between the previously-existing Turcot to Victoria Bridge main line and the new Central Station to Victoria Bridge viaduct. Trains from the west thus enter the new Central Station at the southern end, instead of the northern as originally planned.

Work was thus concentrated in 1939 on completing and adapting what was already well in hand. It began at the Cathcart Street portal of Mount Royal Tunnel, where the double line of rails through the tunnel are 42 ft. below street level, and the permanent way was laid rapidly from here along the new platforms, through the south end of the new station site, and for some distance along the new approach viaduct. By the spring of 1940, these lines on the viaduct were already being used for stabling rolling stock, and the large bridge carrying Lagauchetiere Street over the station site, widening that thoroughfare by some 20 ft., was complete. In present circumstances, Belmont Street (between Dorchester and Lagauchetiere Streets) is not carried across the station site.

Electric Traction

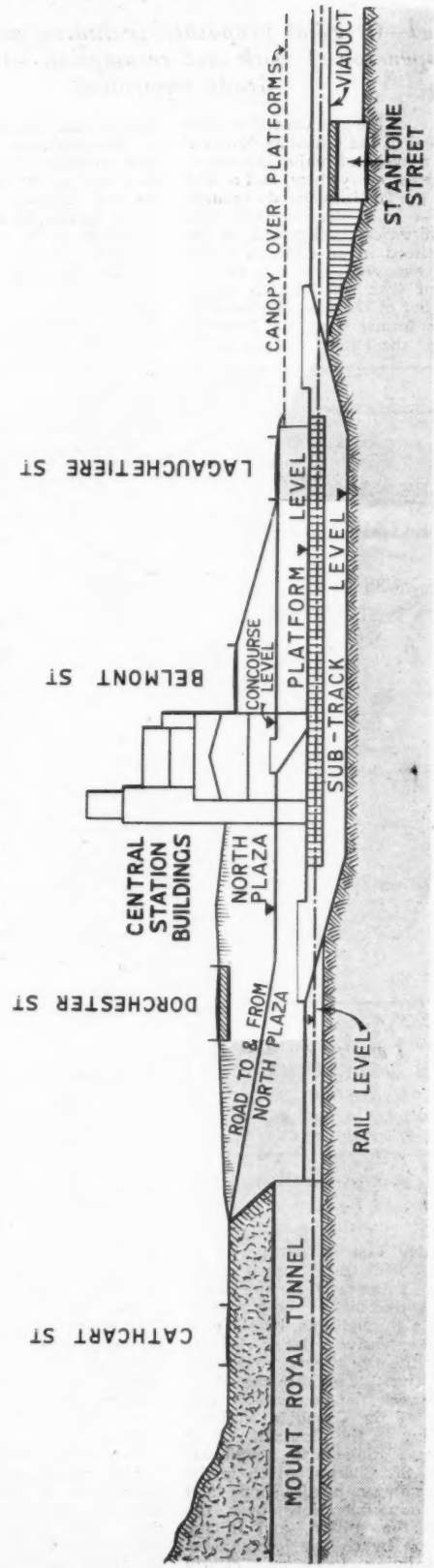
So that only electric traction is used in the new station area and approaches, trains entering the city from the west change to electric locomotives at Turcot, and those from the south at the city end of Victoria Bridge, where a new station, called Bridge Street, has been opened. It is adjacent to the site of the original Montreal Station of the Grand Trunk Railway whence, on October 27, 1856, the first train left for Toronto. Trains from the north, using Mount Royal Tunnel, are either multiple-unit trains or are hauled (as for some years past) by electric locomotives from St. Eustache, a distance of 17 miles.

Level-Crossing Elimination

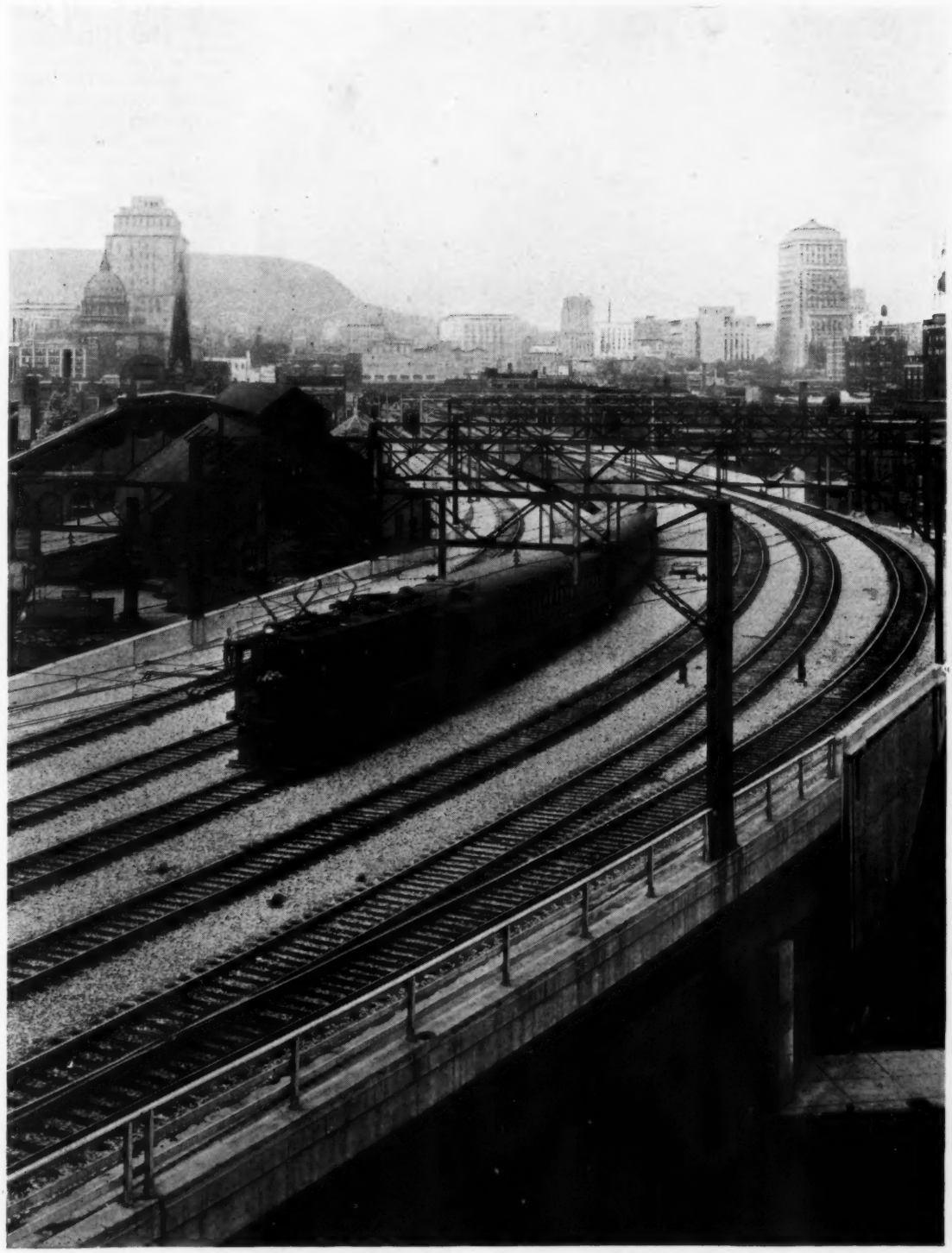
An important feature of the whole Central Station is the abolition of level crossings—or grade separation, as it is called in Canada and the U.S.A. With the opening of the new station on July 15, 1943, an average of 150 train movements a day over level crossings in congested parts of the city have been eliminated; goods train movements over level crossings are timed to cause the minimum of interference with street traffic. Moreover, some 15 level crossings have been eliminated. An important group is between St. Henri and the old Bonaventure Station, which is one of two areas to which attention was directed by the Board of Railway Commissioners in 1927. On this section two streets have been carried over the railway on bridges, and five streets closed. Between Turcot and Point St. Charles, six streets have been carried under the railway, and two streets closed.

(To be continued)

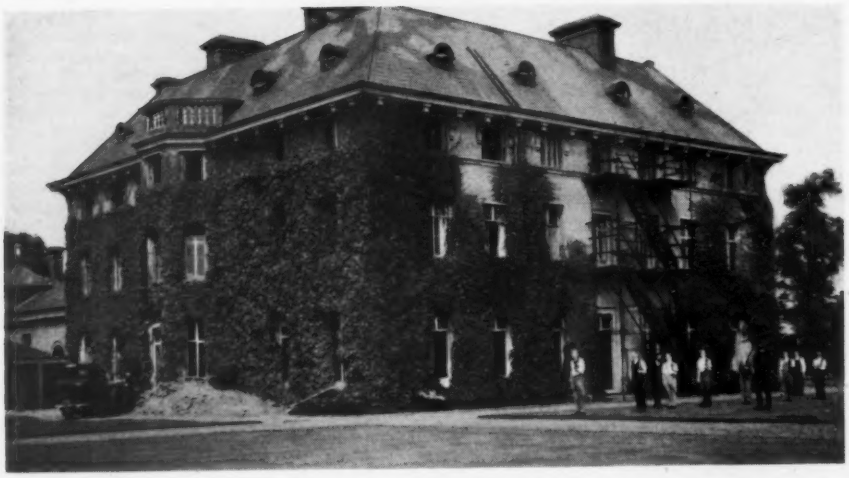
The Use of a Hillside Site



Sketch, not to scale, giving an approximate indication of how the new station site was excavated in the side of a hill, and clever use made of the possibilities. At one end the railway enters from the old 3-mile tunnel under Mount Royal; at the other it emerges on a new viaduct above important city streets. The station itself is on three levels, the lowest of which is for parcels and mail handled by road vehicles; above this is the rail and platform level; and again above this the concourse level. There are two office floors over the concourse



All traffic in and out of the new Central Station at Montreal of the Canadian National Railways is handled by electric locomotives, one of which is seen hauling a passenger train over the new steel and concrete viaduct which spans the downtown streets



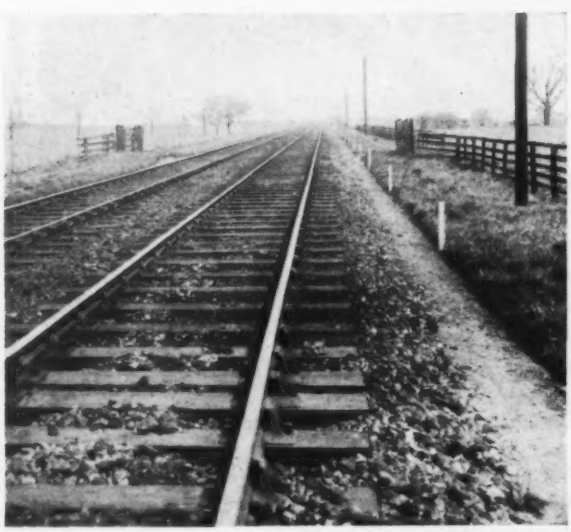
L.N.E.R. H.Q.1 via Hitchin

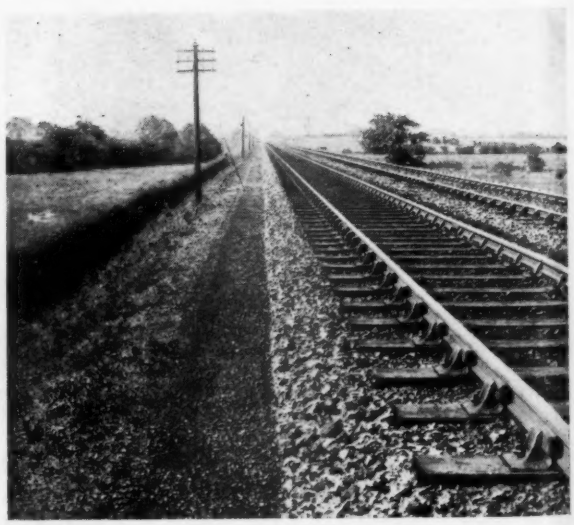
Two recent views of the wartime evacuated country headquarters of the London & North Eastern Railway Company

Left: View of the main building

Below: General view from the lawn

Line-Side Tidiness on the L.N.E.R.





The untidy appearance resulting from badly-dressed ballast in the left-hand illustration above is in striking contrast to the neatness of the permanent way shown in the right-hand illustration

RAILWAY NEWS SECTION

PERSONAL

COLONIAL RAILWAY APPOINTMENTS

The Secretary of State for the Colonies has approved the following appointments:—

Mr. A. Busby, Principal Administrative Assistant, Nigerian Railway, to be Assistant General Manager, Nigerian Railway.

Mr. W. D. Charlton, Principal Assistant Auditor, Palestine, to be Chief Accountant, Palestine Railways.

Mr. W. F. L. Bate, Accountant, Railway Department, Palestine, to be Senior Accountant, Railway Department, Palestine.

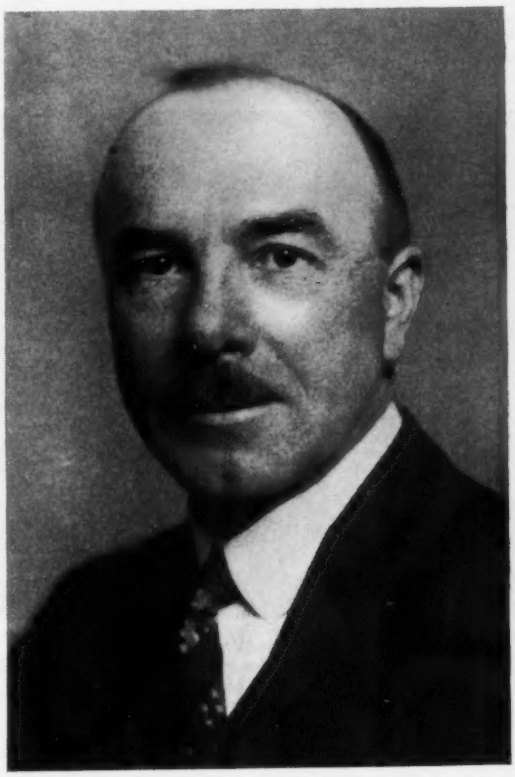
Sir Felix J. C. Pole gave a luncheon party to Lord Leathers at Claridge's on Thursday, May 25. The other guests were Lord Addison, Lord Bicester, Lord Gorell, Lord Perry, Sir Horace Wilson, Sir Cyril Hurcomb, Sir George Bailey, Mr. Cyril Lloyd, Mr. A. J. Boyd and Mr. I. R. Cox.

INSTITUTE OF TRANSPORT

The undermentioned have been elected by the Council to hold office for the year commencing October 1, 1944:—President: Mr. Robert Kelso; Vice-Presidents: Messrs. L. W. Gupwell, C. M. Hoffe, R. H. Jones, F. Rayner, T. W. Royle and J. H. Stirk; Honorary Treasurer: Mr. C. J. Selway; Honorary Librarian: Mr. R. Bell; Honorary Solicitors: Joynson-Hicks & Company; Past-Presidents to serve on the Council: Sir Alexander Gibb, Mr. J. S. Nicholl, Sir Alfred Read, Messrs. G. S. Szlumper and T. E. Thomas, and Sir William Wood.

The following Ordinary Members of Council will retire at September 30 next:—Nine Members: Messrs. R. Davidson, J. Elliot, W. C. Leslie Carter, F. Lydall, J. B. Osler, P. R. Privett, E. W. Rostern, C. H. Sutherland and H. E. O. Wheeler; and one Associate Member: Mr. F. J. Speight. To fill the vacancies created by the retirements, the Council has nominated nine Members: Messrs. C. Barrington (Joint Managing Director, Transport Services Limited); C. T. Brunner (Departmental Manager, Shell-Mex & B.P. Limited); Sir John Fisher (Governing Director, James Fisher & Sons Ltd.; now serving as Director, Coasting & Short Sea Division, Ministry of War Transport); Messrs. K. W. C. Grand (Assistant General Manager, Great Western Railway); J. Ness (Assistant Divisional General Manager, North Eastern Area, L.N.E.R.); W. G. Pape (Indoor Assistant to General Manager, and Wartime Economy & Salvage Liaison Officer, Southern Railway); F. A. Pope (Chief Commercial Manager, L.M.S.R.; recently appointed Director of the Port of Calcutta); F. W. Tipton (Managing Director, Thames Steam Tug & Lighterage Co. Ltd.); and J. S. Wills (Chairman, Ribble Motor Services Limited, and other road passenger transport undertakings; Managing Director, Western Welsh Omnibus Co. Ltd.); and one Associate Member: Mr. G. Dickinson (Assistant to Chief Executive Officer, McNamara & Co. Ltd.). Vacancies do not arise this year for members representing air transport.

Mr. Robert Kelso, whose election as President of the Institute of Transport for the session 1944-45 (the silver jubilee session of the Institute) was recorded in our last week's issue, is Chairman & Managing Director of the General Steam Navigation Co. Ltd., and is on the boards of several other shipping companies. He is a member of the Port of London Authority, and a London member of Lloyd's Register of Shipping. Mr. Kelso became a Member of Council of the Institute of Transport in 1935 and continued to serve on the Council until 1938, during which period he was for two years Vice-Chairman of the Membership & Examinations Committee. From 1938 to 1941 he was a Vice-President of the Institute. He served as Chairman of the Membership & Examinations Committee, and as a Member of the General Purposes and Finance Committees, from 1938 to 1939, and as a member of the wartime Executive Committee from 1939 to 1941. Since his retirement from the office of Vice-President Mr. Kelso has been a member of the Examinations Committee, on which he is still serving.



Elliott **Mr. Robert Kelso** *[& Fry*

Elected President, Institute of Transport, for 1944-45

In the Supplement to ***The London Gazette*** of May 12, there is the following notice:—

Movement Control Staff
Railway & I.W.T.

Capt. E. A. Burnham (42715) having attained the age limit of liability to recall relinquishes his commn., May 14, 1944, retaining the rank of Capt.

We regret to record the death on May 24, in his 84th year, of Sir H. L. Watkin Williams-Wynn, 7th Bt., C.B., who resigned his Directorship of the Great Western Railway Company in February, 1943. He joined the board in 1885, in succession to his uncle, the late Sir Watkin Williams-Wynn, M.P., from whom he inherited the baronetcy. At that time the owner of Wynnstay, his home in Denbighshire, had the right to appoint a director to the Great Western board; this right was abolished by the passing of the Railways Act of 1921. Sir Watkin had been Lord-Lieutenant of Montgomeryshire since 1891. He was M.P. for Denbighshire in 1885, and High Sheriff in 1890; and at one time he commanded the Montgomeryshire Yeomanry Cavalry. A portrait of Sir Watkin, in connection with his retirement from the Great Western board, appeared in our April 9, 1943, issue. (*See editorial note, page* 561).

INDIAN RAILWAY STAFF CHANGES

Mr. J. C. Gibson, Divisional Superintendent, E.I.R., has been permitted to retire from Government service as from December 5 last.

Mr. H. P. Renwick, Chief Mechanical Engineer, G.I.P.R., has been granted two years' leave preparatory to retirement, as from January 6.

Mr. N. S. Sen has been confirmed provisionally as Deputy Transportation Superintendent (Coaching), G.I.P.R.

Mr. R. V. Ramchandani has been appointed to officiate as Deputy Chief Accounts Officer, G.I.P.R.

In our May 19 issue, Mr. W. T. Powell was incorrectly described as Central Divisional Locomotive Running Superintendent, Southern Railway. Mr. Powell was appointed Acting Central Divisional Locomotive Running Superintendent, Southern Railway, in May, 1942, which position he still holds.

G.W.R. APPOINTMENTS

The Great Western Railway announces the following appointments:—

Mr. K. C. Griffiths, Chief Clerk, Divisional Superintendent's Office, Exeter, to be Assistant Divisional Superintendent, Cardiff, as from April 24.

Mr. W. J. Morris, Clerk, Superintendent of the Line's Office, Paddington, to be Chief Clerk, Divisional Superintendent's Office, Exeter, as from April 24.

Mr. D. M. Sinclair, M.I.A.E., M.Inst.T., the confirmation of whose appointment as General Manager & Chief Engineer of the Birmingham & Midland Motor Omnibus Co. Ltd. was recorded briefly in our May 26 issue, joined the company as Chief Engineer in May, 1940. He was born in Glasgow in 1901, and was educated at Bearsden Academy and the Royal Technical College, Glasgow. He served his apprenticeship with Albion Motors Limited, and then joined the British Petroleum Company at Bristol. Mr. Sinclair was appointed Assistant Chief Engineer to the Northern General Trans-

port Co. Ltd. in 1931 and remained with that company until he joined the Birmingham & Midland. He is Chairman of Black & White Motorways Limited, and a Director of the Stratford-upon-Avon Blue Motors Limited.

Professor G. V. Lomonossoff, Dr.-Ing., M.I.Mech.E., who with his son (Captain George Lomonossoff, R.E.M.E.) presented before the Institution of Mechanical Engineers on May 19 the paper on "Condensing Locomotives" of which a summary appears on pages 569 and 570, commenced his railway career in 1895. Six years later he was appointed to the Chair of Railway Engineering & Economics at the Technical Institute, Kiev (Russia), but left in 1907, and became successively Assistant Chief Mechanical Engineer of the

Professor G. V. Lomonossoff

Joint author of a paper on "Condensing Locomotives" before the Institution of Mechanical Engineers

Catherine Railway, Chief Mechanical Engineer of the Tashkent Railway, and Chief Mechanical Engineer of the Nicolas Railway. Later he was made Assistant Director-General of all Russian railways, and held also the position of President of the Research Department. He was a member of the Supreme Engineering Council from 1913 to 1917, and during the next year was President of the Russian War Railway Mission to the U.S.A. From 1911 to 1917 Professor Lomonossoff occupied the Chair of the Russian Institute of Transport; and from 1915 to 1923 he acted as a Technical Under-Secretary of Transport, and was responsible for various improvements and railway constructional works behind the Russian fronts. He then held the position of High Commissioner for Diesel Traction for some years. Subsequently he became Research Associate at the California Institute of Technology, and afterwards spent five years on private research before joining, in 1935, Messrs. Hitchins, Jervis & Partners, consulting engineers, with which firm he remained until his retirement in 1939.

Captain George Lomonossoff, Royal Electrical & Mechanical Engineers, the joint author with his father of the paper on "Condensing Locomotives" given before the Institution of Mechanical Engineers on May 19, was born at Nikopol (Russia) in 1908, and was educated at Leighton Park School, Reading, and St. John's College, Cambridge. In 1929 he joined the Baldwin Locomotive Works (Philadelphia, U.S.A.), and from 1931 to 1934 gained experience in the Diesel Traction Department of Sir W. G. Armstrong, Whitworth & Co. Ltd. Captain Lomonossoff took up an appointment with Messrs. Hitchins, Jervis & Partners, in 1935, which he left in 1937 to join the staff of Messrs. Rendel, Palmer & Tritton. He was commissioned in the R.A.O.C. in August, 1942, and was transferred to the R.E.M.E. a few months later.

Mr. R. D. Kerr, Assistant to Commercial Manager (Passenger), Glasgow, L.M.S.R., who, as recorded in our

Mr. R. D. Kerr

Appointed District Goods & Passenger Manager, Edinburgh, L.M.S.R.

April 14 issue, has been appointed District Goods & Passenger Manager, Edinburgh, entered the service of the former Caledonian Railway as a booking clerk in Edinburgh in 1906. After service at other stations he was appointed to a post in the office of the Superintendent of the Line, Glasgow, in 1913. In 1924 he was appointed Clerk-in-Charge of the Rates & Fares Department under the L.M.S.R., and in 1933 he became Rates & Fares Assistant (Passenger) to the Commercial Manager. He was appointed Assistant to Commercial Manager (Passenger), Glasgow, in 1937. For many years Mr. Kerr was Scottish Representative of the Caledonian Railway (later L.M.S.R.) on the Passenger Train Rates & Fares Conference and various committees at the Railway Clearing House, London; he was Chairman of the Passenger Train Rates & Fares Conference in 1934. He was directly responsible for carrying out the revision of all passenger fares, rates, and distance records applicable from L.M.S.R. Scottish stations in connection with the operation of Part III of the Railways Act, 1921, which took effect as from January 1, 1928.

At a recent meeting of the Joint Demurrage Sub-Committee of the Mining Association and the R.E.C. Special Demurrage Committee, a presentation was made to Mr. W. S. Callow, late Chief of the Mineral Department, Derby, L.M.S.R., as a mark of appreciation of his services to the sub-committee. Mr. Callow comes of a railway family, nine members of which have completed together over 300 years' service. He joined the former L.N.W.R. at Wigan in 1878, and his last appointment was as Chief of the Mineral Department, Derby, from which he retired on May 1 last. He has been a member of the Joint Demurrage Sub-Committee since its inception, and throughout his railway career has been in close contact with coal traders in all parts of the country, many of whom have sent him good wishes for his retirement.

Mrs. Ada Marie Muggeridge (*née* Towle), whose death we recorded last week, retired in 1935 from the position of

The late Mrs. A. M. Muggeridge

Formerly Domestic & Furnishing Assistant to Controller of L.M.S.R. Hotel Services

Domestic & Furnishing Assistant to the Controller of L.M.S.R. Hotel Services. She married Major Muggeridge in 1898, and had two daughters, who survive her. She was a sister of Mr. Arthur Towle, at present Controller of L.M.S.R. Hotel Services, and of Sir Francis Towle, formerly Managing Director of Gordon Hotels Limited and past-President of the International Hotel Alliance. During the building of the Midland Hotel, Manchester, she helped her father, the late Sir William Towle, then Manager of the Hotel & Refreshment Department, Midland Railway, with special reference to furnishing and domestic matters. After spending some time abroad she rejoined the Midland Railway in 1922 as Domestic & Furnishing Assistant to Mr. Arthur Towle, with whom she was prominently associated in the unification of the L.M.S.R. hotels in 1925, and with whom she remained until her retirement ten years later. Mrs. Muggeridge was a Member of Council of the Hotel & Restaurant Association, which body made her an honorary life member. She was among the first women to associate themselves with large business enterprises.

We regret to record the death on May 25, at the age of 62, of Sir Alfred David McAlpine, a member of the firm of Sir Robert McAlpine & Sons Ltd.

TRANSPORT SERVICES AND THE WAR—244

Train Cancellations and Whitsun Traffics

At the same time that the summer timetables were published, it was announced that they would be subject to alterations at short notice to meet military necessities, and that the only intimation to passengers would be black-board notices at stations. Cancellations on all four railways began on May 22, and queues for long-distance trains resulted at London termini; troops were given priority at the discretion of the individual railways. Leeds, Newcastle, and Birmingham were among the areas affected.

> The Railway Executive Committee announces that in view of increasing pressure on the railways it will be necessary to withdraw without notice many more trains during this Summer.
>
> The Public is therefore advised to avoid travelling.

R.E.C. poster issued on May 22

On May 23, London stations were considerably less crowded, and the Service priority became unnecessary.

Lancashire was relatively unaffected by sudden cuts, but the volume of Whitsun traffic to Blackpool, Southport, and the Isle of Man, was in excess of expectations. Advance bookings in the area were suspended on the L.M.S.R., but not on the L.N.E.R. Access to the platforms at Victoria Station, Manchester, was limited to travellers, and the barriers were closed when a train load had been admitted.

Whitsun traffics from London termini were not heavy, but there was considerable congestion on some stations on the Friday and Saturday.

(*See editorial article, page* 563).

L.N.E.R. Summer Timetables

Chief of the alterations in the L.N.E.R. timetables, operative from May 22, are considerable changes in the starting times of various of the principal expresses from Kings Cross, coupled with some easing-out of running times. The 9.30 a.m. to Leeds and Bradford leaves at 9 a.m., and reaches Leeds at 1.21 instead of 1.49 p.m. The 9.50 a.m. to Edinburgh leaves at 9.40 a.m., and arrives in Edinburgh at 6.23 instead of 6.25 p.m. The 10 a.m. "Flying Scotsman" calls only at Peterborough to York, omitting the Grantham stop, and reaches Edinburgh at 6.55 instead of 6.50 p.m. The 10.10 a.m. to Leeds and Bradford leaves at 10.30 a.m., and reaches Leeds at 3.25 instead of 2.59 p.m.; the 12.45 p.m. is due in Edinburgh at 9.46 instead of 9.35 p.m.; and the 1.25 p.m. to Hull leaves at 1.40 p.m., and arrives in Hull at 7.5 p.m., 17 min. later. The 5.30 p.m. is due in Newcastle at 12.18 instead of 12.8 a.m.; and the 8.20 p.m. to Edinburgh is due at 8 a.m. instead of 7.18 a.m. The 10.5 p.m. to Edinburgh (relief to the 10.15 p.m. "Night Scotsman") leaves at 10 p.m., ceases to call at York, and is due in Edinburgh at 6.57 instead of 6.50 a.m. There is an advertised 3.30 p.m. relief from Kings Cross to Grantham, York, Darlington, and Newcastle on Mondays, Fridays, and Saturdays.

In the Up direction the 8.50 a.m. from Darlington to London omits the Grantham stop and calls at Peterborough instead; the 1.10 p.m. from Leeds to Kings Cross starts at 12.35 p.m., and is due at 5.45 instead of 6.2 p.m. On Mondays, Fridays, and Saturdays a relief section of the last-mentioned train leaves Harrogate at 12.5 p.m., runs direct to Doncaster *via* Church Fenton, and reaches Kings Cross at 1.25 p.m. An additional train is run from Newcastle at 12.25 p.m. to Darlington, York, Grantham, and Kings Cross, due at 6.30 p.m., and the up "Flying Scotsman," not calling at York, is due at 6.45 instead of 6.35 p.m. The 10.10 a.m. from Edinburgh leaves at 10.15 a.m., and reaches Kings Cross at 7.20 instead of 7.8 p.m., while the 3 p.m. from Leeds leaves at 3.5 p.m., and is due 8 min. later, at 8.8 p.m. The 5.30 p.m. from Leeds reaches London at 10.38 instead of 10.30 p.m.

In the North Eastern Area the 8.30 a.m. semi-fast from Darlington to Edinburgh starts from York at 7.10 a.m.; the 1.15 p.m. from York to Newcastle starts at 12.55 p.m.; the 2.45 p.m. from York to Newcastle starts at 2.55 p.m., and calls additionally at Chester-le-Street and Birtley; the 12 noon from Newcastle to Leeds starts at 11.50 a.m.

In Scotland the "Aberdonian" (7 p.m. from Kings Cross) leaves Edinburgh at 4.45 instead of 4.30 a.m., and runs 15 min. later, and the 7.10 p.m. leaves at 7.20 p.m. and runs 10 min. later, with arrivals in Aberdeen at 8.29 a.m. and 11.12 p.m. respectively; the 9 a.m. from Aberdeen to Edinburgh starts at 8.50 a.m., and the 6.5 p.m. "Aberdonian" at 6 p.m. The 5.45 p.m. from Edinburgh by the Waverley route leaves at 5.50 p.m. and reaches Carlisle at 9.10 instead of 8.55 p.m., and the 9.50 p.m. sleeping-car express to St. Pancras leaves Edinburgh at 10.15 p.m., and reaches Carlisle 32 min. later, at 1.25 a.m.; the 3.40 p.m. from Carlisle to Edinburgh is due at Waverley at 7.30 instead of 7.14 p.m.

Out of Liverpool Street, the Bury and Hunstanton sections of the 4.40 p.m. down run independently to Cambridge, at 4.32 and 4.40 p.m. respectively; many of the times between Ely and Norwich are eased out, and the 2.20 p.m. from Liverpool Street by this route reaches Norwich at 6.48 instead of 6.25 p.m.

S.R. Summer Train Services

An important feature of the Southern Railway summer timetables, operating from May 22, is that the stop at Woking, which since the blitz winter of 1940-41 has been made by all up and down West of England and Bournemouth line expresses except the 1.25 a.m. down, is now omitted from a number of the schedules. The trains which have discontinued the Woking stop are the 10.50 a.m. and 2.50 p.m. from Waterloo to Plymouth and Ilfracombe (the former is once again non-stop from Waterloo to Salisbury); the 11.30 a.m., 12.35 p.m. (Saturdays), 1.30 p.m., 3.20 p.m. and 4.35 p.m. Waterloo to Bournemouth; and the 4.45 p.m. and 5.45 p.m. Waterloo to Portsmouth Harbour. In the up direction the Woking call is omitted by the 7.30 a.m., 10.35 a.m., and 2.30 p.m. from Exeter to Waterloo; and also the 7.31 a.m., 8.40 a.m., 10.31 a.m., 2.30 p.m., 2.40 p.m., and 3.17 p.m. Bournemouth Central to Waterloo. The 7.25 a.m., 7.39 a.m., 8.15 a.m., and 8.42 a.m. from Portsmouth Harbour to Waterloo, which previously were the only up trains to pass Woking without stopping, continue to do so. None of the trains concerned has any cut in running times by reason of the omission of this stop; on the contrary, the 10.35 a.m. from Exeter reaches Waterloo 5 min. later, at 2.47 p.m., the 2.30 p.m. up, 8 min. later, at 6.40 p.m., and the 7.31 a.m. from Bournemouth 5 min. later, at 10.13 a.m. The usual summer relief services are run from Exeter at 10.25 a.m. to Salisbury and Waterloo only, due 2.24 p.m., on Mondays, Fridays, and Saturdays; and daily from Exeter at 12.10 p.m. to Salisbury, Andover, and Waterloo, due 4.19 p.m.; and also daily at 4.30 p.m. from Exeter to Axminster, Yeovil, Templecombe, Salisbury, Andover, Basingstoke, and Waterloo, due at 8.45 p.m.

Passengers on Goods Trains in Eire

Passenger accommodation is being provided by the Great Southern Railways on the up and down night perishable-goods trains between Cork and Dublin, as from May 15. The accommodation is limited strictly to persons with a priority claim to travel, and application to join these trains must be made in the first instance to the Traffic Department offices at Cork and Kingsbridge.

Egyptian Railway Hospital

A special hospital, built at the expense of the Egyptian State Railways and reserved for members of its staff, was opened at Subra early in March.

Budapest Evacuation Traffic

After repeated Allied air attacks on the Hungarian capital, evacuation on organised lines began on April 7, and subsequently special evacuation trains between Budapest and provincial centres have been operated from most of the railway termini. Because of coaching stock shortage, most of the trains have consisted of covered goods wagons with wooden benches. A few carriages have been attached to every train, reserved for sick persons, mothers with children under five years, and the elderly. Every evacuee is allowed to take luggage and other belongings up to 330 lb., which, as there are no luggage vans in the evacuation trains, must be taken in the wagons in the care of the passengers themselves. Free tickets for travel on the evacuation trains must be secured two days in advance of the journey; these are issued on production of evacuation certificates issued by the municipal district authorities. Departure times are announced by radio. Special trams with luggage vans attached take evacuees and their belongings to the various railway termini; these services are operated between 9 a.m. and 2 p.m. and between 7 p.m. and midnight. Evacuees not using the evacuation trains are granted a 30 per cent. reduction on the normal fares. Between April 5 and 7 this reduction was as high as 50 per cent. with the object of expediting evacuation before the mass evacuation services began.

To ease the situation of persons leaving abruptly from towns suddenly bombed, or under the threat of impending air attack, passengers found travelling without tickets are neither fined nor prosecuted if they are able to prove that they boarded a train in such circumstances.

Japanese Travel Restrictions

The Japanese Cabinet recently decided to introduce extensive restrictions on railway travel. These include, from April 1, the withdrawal of all fast trains, and of first-class

accommodation, dining cars, and sleeping cars. Travellers are required to obtain "necessity" permits from the police for journeys exceeding 62 miles.

The New United States Tax Law

The passage of the new United States tax law, over the President's veto, resulted in an increase, from April 1, from 10 to 15 per cent. in the rate of excise tax applicable to passenger fares. Social security tax rates were "frozen" at their previous levels, and railway retirement and unemployment insurance taxes remained unaffected. Excess profits tax, as applicable to corporations, increased from 90 to 95 per cent., but the 5 per cent. credit rate on invested capital of over $200 million, allowed for excess profit tax purposes, has not been altered. The tax relief provisions claimed by the railways in respect of deferred maintenance and for other reasons have not been granted in the new law, but it enacts that charges on Federal Government freight will cease from June 1 to be exempt from the tax on the transport either of property or of persons, though the exemption will still apply to freight charges paid by individual States.

U.S. Railway Presidents as Army Colonels

In connection with the taking over of the American railways by the Federal Government of the United States on December 27 last, in expectation of the railway strike which had been called for December 30, leading railway officials were given commissions as colonels in the American Army, to act as Regional Directors. These included Mr. M. W. Clement, President of the Pennsylvania Railroad, who became Chief Adviser to Lieut.-General Brehan Somervell, Lieut.-General Commanding the War Department Operation of Railroads; Mr. F. E. Williamson, President of the New York Central System, Regional Director, New York; Mr. R. B. White, President of the Baltimore & Ohio Railroad, Regional Director, Baltimore; Mr. E. E. Norris, President, Southern Railway, Regional Director, Washington; Mr. Ralph Budd, President, Chicago, Burlington & Quincy Railroad, Regional Director, Chicago; Mr. L. W. Baldwin, President, Missouri Pacific Lines, Regional Director, St. Louis; and Mr. W. J. Jenks, President, Norfolk & Western Railway, Regional Director, Roanoke. The strike was called off, however, and the colonels concerned relinquished their army rank on January 31, except Colonel R. B. White, who was retired on February 10.

C.P.R. Wartime Activities

Although the transport needs of the Dominion of Canada continued to expand in 1943 by reason of the increase in production of munitions of war, and the intensification of hostilities, the directors of the Canadian Pacific Railway are able to report with satisfaction that in no instance during the financial year ended December 31, 1943, did traffic congestion develop or failures occur in supplying essential transport. On the other hand, the record of the year's activities again demonstrated that efficient rail transport was a vital force in the prosecution of the war. The labour turnover was more than three times the normal rate, and operating difficulties were thus accentuated. In fact, the training of inexperienced employees has presented a serious problem to the officers and senior employees of the company. C.P.R. customers have helped greatly by accepting cheerfully the unavoidable inconveniences which attended the movement of passenger and goods traffic during the year.

Railway facilities were extended to meet the demands of expanded production, and 34 miles of industrial tracks were provided during 1943 to serve 104 new plants throughout the Dominion. The Valentine tank project, begun at the company's Angus Shops in 1940, was completed during the year, and these works are now being used for the production of marine engines. Naval guns of various types continue to be produced in quantity at the Ogden Shops in Calgary, involving the full use of the former locomotive erecting shop there.

The inspection of locomotives and rolling stock which are being manufactured in Canada for the Indian State Railways and the Jamaica Government Railway was undertaken by the C.P.R. The contract with the Indian State Railways requires both the specification of materials and approval of workmanship, and also supervision of the re-erection of the locomotives when they reach the Far East.

Reducing Japanese Traffic Peaks

A scheme is now being evolved by the Japanese Ministry of Transport to avoid the summer season reduction in goods traffic, with the object of evening out the autumn traffic peak by conveying as much in advance as possible. It may be recalled that the German State Railway stated in its report for 1943 that a large part of its success in coping with intensive war traffics was due to the skill of the railway management in arranging traffic in such a way that a substantial part of the usual autumn traffic was handled during the preceding summer months.

Last year, the Japanese launched a drive with this object in the spring, and subsequently claimed that success had been achieved, but the present planning of a new scheme appears to indicate that arrangements require a considerable measure of encouragement or compulsion, and that they are not accepted by the trading community as routine practice. Last year delegations of the then Ministries of Railways and Traffic, as well as of the Ministry of Industries, visited all industrial and agricultural centres in order to eliminate as far as possible the effects of the labour shortage, which were adversely influencing production. As a result of these and similar endeavours, the goods traffic of the State Railways and privately-owned railways was stated to have expanded by 14 per cent. in July and August, 1943, compared with the same months of 1942, and in certain individual groups of commodities the increase was even more marked. For instance, the conveyance of iron and steel (inclusive of scrap) is stated to have risen by no less than 58 per cent.; with ores the increase was 22 per cent.; and with timber 32 per cent. On the other hand, only an 8 per cent. increase was shown for hard coal.

Bulgarian Railway Developments

(See map opposite)

The narrow-gauge railway serving the Struma Valley in Bulgaria between Gorna Djumaia and Kulata has now been extended through the Rupel Pass to Siderocastro (Demirhissar), according to the Bulgarian press. Kresna Halt, on the Gorna Djumaia-Kulata line, has been converted into a full station maintaining the same name; Belitsa Halt has also been converted into a station, but its name has been changed to Belitsa na Strumi (Belitsa on the River Struma) to differentiate it from Belitsa Station on the Yakoruda-Bansko narrow-gauge line to the south-east of Sofia.

Further sections of the latter narrow-gauge railway seem to have been opened from time to time. At the outbreak of war, the railhead was at Istok. Subsequently, Razlog was mentioned as the railhead, and traffic is now reported to have been working through to Bansko since July of last year. The gauge of this Mesta Valley line is 2 ft. 6 in.

It appears that intensive work is now in progress on the conversion of the Struma Valley Railway to standard gauge, for it was reported from Istanbul on March 28 that some 5,000 Jews and 20,000 Bulgarian Moslems were being employed on the work; the Jewish labour is said to be forced. This realignment of the narrow-gauge line will necessitate the construction or enlargement of more than 20 tunnels. The Bulgarian State Railways administration expects the work to be completed this autumn.

In October last, Eschwege Halt, on the Salonika-Alexandropolis main line, was converted into a full railway station for passenger and goods traffic. Eschwege is a small village, the local name of which is Hadji Bejlik, between Siderocastro and Rodopolis; it is that part of north-eastern Greece now in Bulgarian occupation. Siderocastro is now known as Valovista; Rodopolis as Poroi; and Hadji Bejlik as Eschwege. The last-named German designation is derived from the name of the German aviator, Eschwege, who crashed near Hadji Bejlik in the first world war. Rodopolis (Poroi) until recently was the frontier station between the Bulgarian-occupied Greek territory and the German-occupied Salonika zone. According to news just to hand, Bulgaria recently proceeded to occupy additional areas in northern Greece, such as Florina province, to the west of Salonika, but it is not stated where the demarcation line between this new Bulgarian zone and the German-occupied Salonika zone now lies, though Florina has been occupied.

Work is said to be proceeding on the Makotzeva-Sopot standard-gauge line, which will provide a direct link between Sofia and Karlovo and thus facilitate transit between the western and eastern areas of Central Bulgaria.

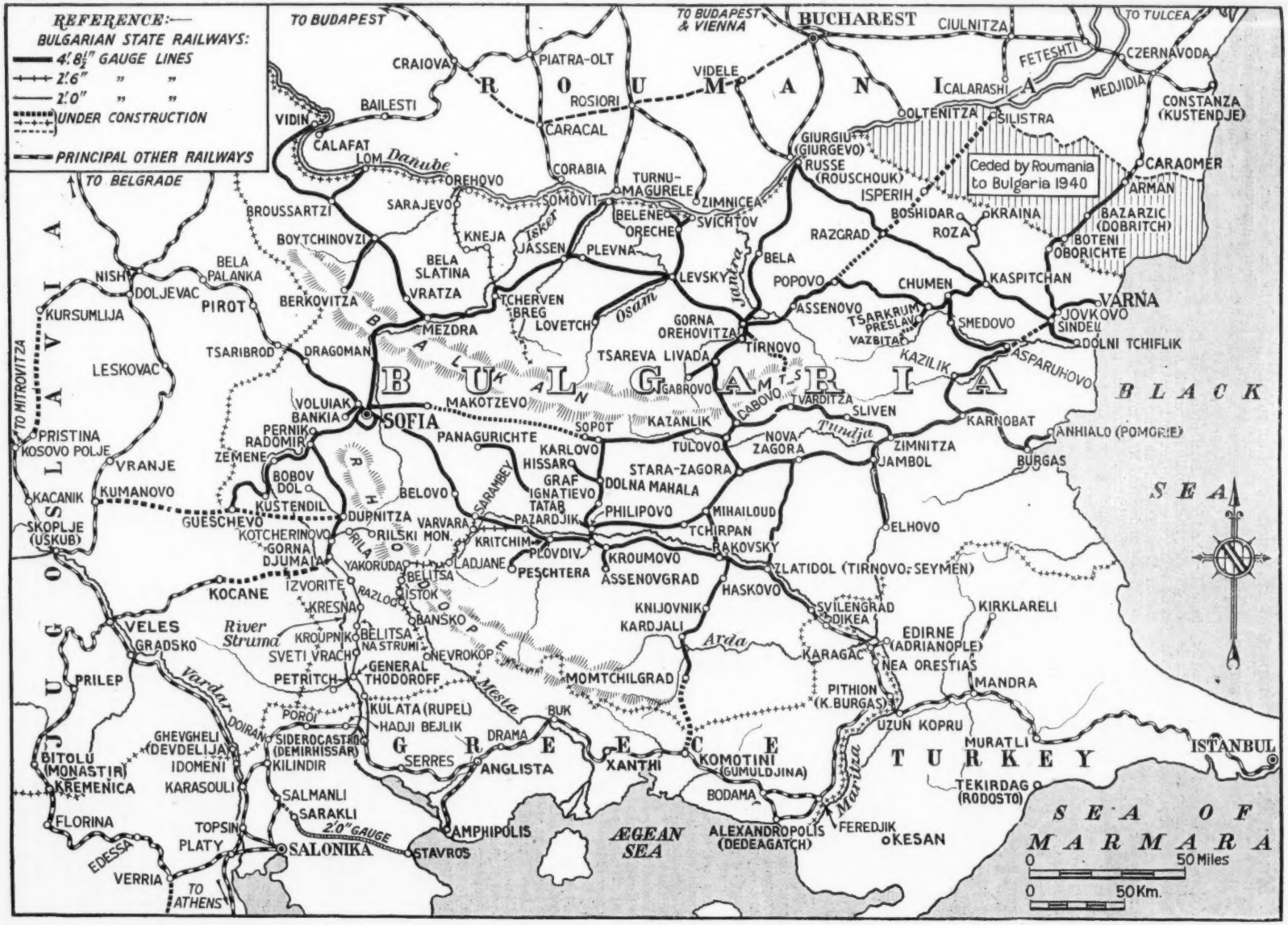
In eastern Bulgaria the Sindel-Murna section of the Sindel-Karnobat line was opened on December 6 last. Sindel is on the Varna-Sofia main line, 22 miles to the west of Varna.

Intensive work is said to be in progress on a survey of the site for a railway from Popovo to Silistra (on the River Danube), *via* Razgrad and Isperih. The work is stated to have been completed for a distance of 30 km. (19 miles) from Isperih, Silistra is in southern Dobrudja, which passed to Roumania after the Balkan wars of 1912-13, but was ceded to Bulgaria in August, 1940.

The Bulgarian Press of August 6 last announced that a new railway was to be built between Krupnik (in the Old Kingdom) and Kumanovo (in Jugoslavia), *via* Dupnitza and Gueschevo.

A combined rail and road service is now being maintained between Sofia and Skoplje, and through rail and road tickets, both single and return, are issued. In connection with this service, a fast railcar was introduced on December 15 last on the rail section of the route, namely, the 91-mile standard-gauge railway between Sofia and Gueschevo.

XUM



Revised map of Bulgaria showing recently-completed railways, and lines now reported to be under construction. (See opposite page)

Canadian Railways and Air Lines

Mr. C. D. Howe's important statement on Canadian Government policy

In view of its importance, as a matter of Dominion policy, the statement made on behalf of the Government to the Canadian House of Commons by the Honourable Mr. C. D. Howe, on March 17, is set out below in the form of extracts supplied to us officially by the Canadian National Railways.

The Trans-Canada Air Lines Act was presented to Parliament in the session of 1937. The intention of the Government had been that of uniting the strongest transport interests in Canada to undertake this new venture, and I approached the Canadian National Railways, the Canadian Pacific Railway Company, and Canadian Airways, the last-named by far the strongest of the air transport companies then operating. These companies were invited to provide the needed capital, and assume the ownership of the air line company, and the Government was to assume responsibility for building adequate airports and the necessary communication system. Each of the three component companies was to share equally in the ownership of the air line, and each was to have two directors on a board of nine, with the Government appointing three directors on account of its investment in airports and communications. The financial provisions were the same as those finally adopted and now in force, which made the company a non-profit organisation that was also protected against the loss of its capital.

The Canadian Pacific Railway Company and Canadian Airways objected to having three Government directors on the board, and at the last moment these two companies withdrew their support, with the result that the Trans-Canada Air Lines Act provided for full ownership of the enterprise by the Canadian National Railways. The newly-formed Trans-Canada Air Lines lost no time in organising for operation. The President of Canadian National Railways was made President of the company; three other directors of the railway were appointed directors of the new company; and three directors were appointed from the Government service, two from the Department of Transport, and one from the Post Office Department. The directors chose a General Manager in the person of Mr. Phillip G. Johnson, now President of the Boeing Aircraft Company, and one of the leading business men of the United States. Mr. Johnson had been a pioneer in transport by air in the United States, and was perhaps the man best qualified by ability and experience to plan the new system. He came to Canada, at what was for him a very nominal salary, and spent two years here as Operating Vice-President. His ambition was to make Trans-Canada Air Lines the finest air transport system in North America, and although he returned to the United States in 1940, his influence on the management is still very noticeable.

The work of building a chain of modern airports and of gathering and training an operating personnel was pressed forward vigorously, with the result that Trans-Canada Air Lines was placed in operation early in 1938. Traffic built up very rapidly, and Trans-Canada grew until at the outbreak of war its services extended eastward from Vancouver to Moncton, southward from Toronto to New York and from Vancouver to Seattle, and northward from Lethbridge to Edmonton. In the early war years, military requirements made it necessary to extend the service eastward to Halifax, and from Moncton to Sydney and on to Newfoundland, and westward to Victoria. Increasing traffic has made the line an outstanding financial success. Its safety record is the best of any air line operating anywhere. Had it been possible during the war years to provide equipment to meet travel demands, the financial position of the company would have been still further improved. At the moment if we could double our equipment, indications are that we would have every seat occupied.

It had been contemplated that Trans-Canada Air Lines would be a non-competitive, non-profit system of transport by air, planned to avoid the duplication of services that were the outgrowth of competitive building for profit in the field of surface transport. The Trans-Canada Air Lines Act contemplated that Trans-Canada Air Lines would operate all the principal routes parallel to the international boundary, as well as Canada's interest in all international routes, and these on a non-competitive basis. The field of routes into Canada's northland, as well as the field of air service in the settled areas complementary to the Trans-Canada operation, was left to private enterprise. The reason for this is not hard to explain. Trans-Canada was to be a high-standard operation, competitive with paralleling transcontinental air transport services in the United States. Canada, having one-twelfth of the population of the United States, could support one service of this type, as against three similar parallel services in the United States, but, obviously, to have a second coast to coast service in Canada would be wasteful and unjustifible. Services to the public must be the paramount consideration, and it seemed obvious that the cost of a non-competitive, non-profit service was the lowest that could be offered to the public. An impartial analysis of the situation to-day leads to no other conclusion. However, the newly-formed Canadian Pacific Air Lines lost no time in challenging the non-competitive position of Trans-Canada Air Lines, and in reaching out for new franchises; this at a time when it alone seemed to be able to buy new and modern equipment.

To clarify the situation, the Prime Minister made a statement with respect to policy as to domestic and international aviation in this House of Commons, which is reported in *Hansard* of April 2, 1943. The statement sets out with great clarity the views of this Government, with respect to future development of both domestic and international aviation. The policy then enunciated continues to be the policy of this Government. This statement of policy, I regret to say, failed to bring about conformation to government policy in the development of privately-owned air services within Canada, nor did it end intervention of private interests in the international field. It is becoming obvious that ownership of airways by our two competing railway systems implies extension of railway competition into transport by air, regardless of the Government's desire to avoid competition between air services. In the old days, competitive railway building developed pressure methods for obtaining new franchises. Such methods must not have a place in the development of our airways.

The Government desires the rapid development of air transport services in order, among other reasons, to offer post-war employment to Royal Canadian Air Force personnel. Canada's northland was pioneered by small operators, who were content to enlarge their operations only as warranted by the development of the area they served. The Government believes that feeder-line operations, and pioneer lines into our northland, can best be developed as small operations. Our returning airmen will not be satisfied, in entering this new field of employment, to serve only as salaried employees. In this new medium of transport, there must be a place reserved for small business enterprise.

Accordingly, after full consideration, the Government has decided that the railways shall not exercise any monopoly of air services. Steps will be taken to require our railways to divest themselves of ownership of air lines, to the end that, within a period of one year from the ending of the European war, transport by air will be entirely separate from surface transport. In the meantime, no new air routes other than Government-operated routes will be allocated to air lines owned by any railway or other operator of surface transport. The term "surface transport" includes railways, shipping companies, and highway transport companies.

The United States Civil Aeronautics Act of 1938 provides that no common carrier (that is, surface carrier) shall own, manage, or operate any air carrier, unless specific provision has been given by the Civil Aeronautics Board. Apparently, the principle is well established in the United States that surface carriers are not permitted to engage in the air transport business. I mention this to indicate that the problem which has arisen in Canada is not new on this continent.

In speaking in the House of Commons in the debate on the Trans-Canada Air Lines Bill reported on page 3388 of *Hansard* of 1937, I gave the following reason for making Trans-Canada Air Lines a subsidiary of Canadian National Railways:—

"After the consideration of these matters, the Government has decided that its agency for transport, the Canadian National Railways, should be the means of organising this company, just as it was used as the means for operating such shipping as the Government owned and the means of operating other Government transport facilities. I think we are getting the best features of Government ownership without the obligation of direct Government operation which in the past has been troublesome."

While I have had no cause to regret the step taken at that time, the entry of a privately-owned railway into the field of air transport had made it apparent that the advantage of Government ownership "without the obligation of direct Government operation" does not compensate for the disadvantage of introducing into air transport the competitive methods of the railways. Therefore, it will be necessary to divorce Trans-Canada Air Lines from the Canadian National Railways and operate the former as a Government company. The Canadian National Railways have given splendid administration to Trans-Canada Air Lines, and personally I regret the necessity for the separation.

Luncheon to Mr. F. H. Grosvenor

Mr. F. H. Grosvenor who recently retired from the position of Passenger Manager of the P. & O. Line, after 52 years of service with the Company, was entertained by a number of friends in the Transport industry at luncheon at the Savoy Hotel on May 23.

Those present were :—

Messrs. A. E. Allcock (Aberdeen & Commonwealth Line Limited); T. Argile (Railway Rates Tribunal); W. Baird (Canadian Pacific Railway); R. Biddle (Ministry of War Transport); J. Buchanan (Director, Henderson Line); H. J. Bourne (Continental Dept., Southern Railway); P. A. Clews (European Manager, Canadian National Railways); H. Drakeford (Netherlands Royal Mail S.S. Company); W. Douglas (Shaw Savill & Albion Co. Ltd.); W. Elliott (General Manager, Pickfords Limited); Keith Grand (Assistant General Manager, G.W.R.); G. H. Griffith (Pullman Car Co. Ltd.); G. Hancock (Shaw Savill & Albion Co. Ltd.); Dennis Handover (Air Adviser to the four main-line railway companies); Walter Hind (Shipping Manager, Thos. Cook & Son Ltd.); E. Huskisson (Director & General Manager, Thos. Cook & Son Ltd.); Commander Hare (Admiralty); Shirley James (Passenger Manager, Pickfords Limited); Raymond Jones (Passenger Manager, Aberdeen & Commonwealth Lines Limited); J. A. Kay (Editor, *The Railway Gazette*); V. Kernan, (Cunard White Star Line); R. Laing (Passenger Manager, Union Castle Line); J. Motley (Canadian Pacific Railway); J. Moore (United States Lines Company); D. A. MacKinnon (G.W.R.); Harold Moxon; G. MacRoberts (Manager, Cox & Kings); George Orton (Commercial Assistant to Superintendent of the Line, G.W.R.); D. Phillips; J. Prout (Orient Line); S. Roberts (Managing Director, Cox & Kings); G. Rowlandson (European Manager, Canadian Pacific Railway); G. Rhodes (Passenger Manager, French Line); B. H. Russell (West End Manager, Cunard-White Star Limited); H. Roberts (London Passenger Manager, L.M.S.R.); Gilbert S. Szlumper (Ministry of Supply); Herbert Smith (Managing Director, Keith Prowse & Co., Ltd.); Commander St. John (Managing Director, Daimler Hire Limited); and Richmond Temple.

The toast of "Our Guest" was proposed by: Mr. E. Huskisson (Thos. Cook & Son, Ltd.); Mr. Ben. H. Russell (Cunard-White Star Line); Mr. Dennis Handover (Air Services); and Mr. Gilbert Szlumper (late General Manager, Southern Railway).

Mr. Grosvenor in responding said that throughout his business career his endeavour had always been to appreciate the other man's point of view.

Parliamentary Notes

L.N.E.R. Bill

The London & North Eastern Railway Bill, as amended, was read the third time and passed in the House of Lords on May 24.

U.S.A. Railways and Government Traffic.—It is reported that the U.S. House of Representatives has repealed the land grant statute under which certain railways are required to reduce their rate for Government traffic. The increase in revenues of the railways as a result of the repeal is estimated at $250,000,000 (about £62,500,000) annually.

CONDENSING LOCOMOTIVES—

(*Continued from page* 570)

mixtures, were a persistent difficulty. Those teething troubles would no doubt have been overcome with further experience; the experiments were ended because the induced draught was insufficient to enable the engine to take its place in the link with others of its class.

Dr. F. T. Barwell wondered whether some substance other than steam might be selected as the working fluid for closed-circuit operation. With diphenyl, for example, at a maximum operating temperature of 750° F., it would be possible for the cycle to absorb heat isothermally without a pressure of 159 lb. per sq. in. being exceeded; and a theoretical (Rankine) efficiency of 34 per cent. would be attainable. The important property of diphenyl was that when expanded to a vacuum of 29 in. of mercury, the temperature of the condensate was 280° F.; assuming an ambient temperature of 70° F., a condenser only one-seventh of the size needed for the steam cycle could be used with diphenyl. Here the aid of the physical chemist could be enlisted to select a working fluid to fit the cycle, instead of (as in the past) fitting the cycle to the working fluid.

Mr. H. I. Andrews referred to space limitations on condensing-locomotive design. Evaporative elements were the most satisfactory on that reckoning. High air-speed was needed; and not only must all the water be evaporated, but also evaporation must take place in intimate thermal contact with the element. A flattened horizontal tube, with small upturned edges forming a tray with a thin film of water on the top, had given promising results. A very light grillage could be put on the top to hold the water in place on the tray, even in the worst periods of shunting. The curve of heat loss turned sharply upwards at air speeds of 35 m.p.h., and continued steeply up to 65 m.p.h., when the water began to be torn from the tray. Banks of such trays might be used in place of a condenser; their maintenance was very simple, and a failure of blowing or of water supply could not incapacitate the locomotive. A final advantage of an evaporative condenser was that it was less susceptible to change of outside temperature than the dry type.

Mr. D. R. Carling considered it essential that a more efficient locomotive should be at least as reliable as the type it replaced. The cost of one extra day out of traffic might be as great as the fuel saved in many days' running; the cost of a failure in service might be still greater. Although the introduction of condensation for reciprocating locomotives should raise no serious problems, adequate staff training would be required. In districts where the water supply was unsuitable for boiler feed, condensing locomotives seemed to be an alternative to water treatment. He asked what type of condenser the authors would recommend for a hot wet climate.

Mr. E. L. Diamond said that it was generally agreed that the characteristic feature of the Stephensonian locomotive, which had caused its perpetuation over a very long period, was the use of exhaust steam to create an induced draught for the fire. That wonderful automatic arrangement could be likened only to the breathing of a living animal in its extraordinary adaptability. That was not all, however, for as the engine worked harder it breathed harder and thereby stimulated its processes of combustion; if the pressure fell (as was sometimes inevitable, because of variable operating conditions) the condition of the boiler could be restored by a very slight reduction in power. Until that aspect of the situation was faced by condensing locomotive designers, such locomotives were doomed to failure—as had actually happened in the cases mentioned by Mr. Cox and Mr. Holcroft.

Mr. E. C. Poultney, O.B.E., criticised the use of the terms "rail horse-power" and "shaft horse-power" in the paper and suggested the use instead of "cylinder horse-power" which would be better understood by locomotive engineers. As to the possibilities of condensing locomotives, Mr. James MacLeod, who was associated with the late Sir Hugh Reid in their design, apparently came to the conclusion in more recent years (in 1929, in a paper before the Institution of Engineers & Shipbuilders in Scotland) that condensing probably was not worth while, and suggested the use of much higher pressures instead, with turbine propulsion. A pressure of 750 lb. per sq. in. and an initial steam temperature of 750° F. was, in fact, proposed. By means of a graph, Mr. Poultney showed how much greater an amount of heat, per lb. of steam, was available for conversion into work if efforts were made to increase the initial pressure, compared with the extra amount that could be made available by resorting to condensation. He understood that the Argentine condensing locomotives worked with a vacuum of 16-22 in. and that the efficiency of boiler plant and turbine was about 14 per cent., as compared with the figure of 10·8 per cent. given by Sir William Stanier for ordinary locomotives. In conclusion, he showed a slide illustrating the first turbine locomotive ever built. It had four turbines, two on each side, and the steam passed through all four in succession, finally exhausting to the chimney. The engine was built in Italy in 1907.

Captain G. Lomonossoff, R.E.M.E., briefly replied to a few of the points raised, pending the preparation of a considered reply in writing. He agreed with Mr. Bulleid on the importance of availability; the fact that time was lost because of boiler washing in the ordinary locomotive showed, to some extent, the value of exhaust steam condensation; but in countries where water was scarce, the fact that water was saved was of even greater importance. He could not agree that a saving on the present coal consumption of 50 lb. per mile was not worth having; the Maffei locomotive had shown a 25 per cent. saving, which would reduce Mr. Bulleid's figure to 38 lb. per mile.

Mr. Puttick had referred to the high temperatures in the area served by the N.W.R. (India). If a wet air condenser were used under those conditions, with a condensation temperature of 212° F., it should still be possible to have a condensing locomotive developing 1,750 h.p., which was sufficient for some colonial lines.

In reply to Dr. Barwell, the whole point of using water instead of some other medium was its ready availability throughout the world; even in so-called waterless countries it was more readily available than, say, diphenyl.

He agreed with Mr. Diamond that the ordinary locomotive had a great advantage in that the blast pipe made it self-regulating; but he did not think that locomotive crews were less intelligent than the average driver of a motor car, which was anything but self-regulating. However, one of the advantages of the reciprocating condensing locomotive was that the whole exhaust went through the draught turbine. Some other method would have to be devised for the turbine locomotive.

In reply to Mr. Poultney, the use of such terms as "rail horse-power" was deliberate. Any self-propelled railway vehicle developed its power actually at the point of contact between its driving wheels and the rail. One might say that a railcar had no drawbar pull, but that did not mean that it did no useful work.

Notes and News

S.R. Sugar Beet Traffic.—The Southern Railway conveyed 103,152 tons of sugar beet in 12,351 wagons during the 1943-44 season just concluded.

L.N.E.R. Sugar Beet Traffic.—Of the 18 sugar beet factories in Great Britain, 15 are served by the L.N.E.R. To these 15 factories the L.N.E.R. moved in 118,376 wagons well over 1,000,000 tons of beet during the recent lifting season of 116 days.

Great Indian Peninsula Railway Annuities.—It is notified that in accordance with the provisions of the Great Indian Peninsula Railway Purchase Act, 1900, a total of £26,285,670 was, on May 1, 1944, invested for the purpose of providing a sinking fund in respect of the annuities Class "B."

Railway under the Suez Canal.—The Egyptian Ministry of Communications is reported to have prepared a detailed scheme for constructing a railway tunnel under the Suez Canal, between Port Said and Port Fuad. It is stated that this would be used eventually as a direct link between the Egyptian and Palestine railway systems.

L.N.E.R. Debenture Stock Warrants.—For the purpose of preparing interest warrants in respect of the L.N.E.R. 3 per cent. and 4 per cent. debenture stocks and 4½ per cent. sinking fund debenture stock for the half year ending June 30, balances will be struck as at the close of business on June 10. (See "Official Notices," page 583).

Arica & Tacna Railway Company.—A general meeting will be held at the company's office, 69, Old Broad Street, E.C.2, on Thursday, June 15, at 11.30 a.m., for the purpose of considering proposals for the liquidation of the company and distribution of the assets, including a payment of £1,250 to the late secretary. A circular is being sent to all shareholders whose names and addresses are known. The amount received from the Peruvian Government is £7,139. After meeting the proposed payment to the late secretary, there would remain £5,689, or sufficient to return 5/- capital on each £20 share.

Railway Control Agreement.—The Council of the L.N.E.R Stockholders' Association announces that the case for the revision of the railway control agreement in accordance with the resolution passed by the stockholders at the last annual general meeting of the L.N.E.R. has been submitted to the Minister of War Transport. The Council urges its members and other stockholders of all classes in British railways to write to their M.Ps., asking them to support the stockholders' claim for a revision of the agreement in such a manner as shall enable the four mainline companies to receive their standard revenues in accordance with the Railways Act, 1921.

Imperial Chemical Industries Limited.—Manufacturing and trading profits of the group in 1943 were £17,222,253 (£20,616,996). Provision for taxation takes £6,050,682 (£9,720,172), debenture and loan interest £257,375 (£264,027), directors' remuneration £67,952 (£69,169), pension funds, etc. £1,509,603 (£1,462,712), miscellaneous expenditure written off £205,177 (£246,134), and obsolescence and depreciation £3,571,666 (£3,617,399), leaving consolidated net income at £442,172, against £6,873,205. The net profit of the parent company was £6,655,745, and the total amount available for distribution, including £965,499 brought in is £7,650,844. War contingency reserve takes £774,210, and war personnel reserve £100,000. The ordinary dividend is maintained at 8 per cent., less tax, and £1,062,018 is carried forward.

Buenos Ayres Western Railway Limited.—The directors have resolved that a payment of one half-year's arrears of interest to December 31, 1943, be made on August 3 on the 4 per cent. and 5 per cent. debenture stocks.

British Oxygen Co. Ltd.—The report for the year 1943 shows a balance of profit including dividends from subsidiary, allied and other companies, and after providing for depreciation and E.P.T., of £932,165. Deducting directors' fees £2,600, contributions to staff and pension funds £46,804, and provision of £498,234 for income tax, leaves £384,527, to which has to be added £113,804 brought forward, making £498,331. The final dividend on the ordinary stock is 8 per cent., less tax, again making 15 per cent., less tax, for the year. General reserve gets £100,000 (nil) and £87,471 is carried forward.

An Indian Railway Purchase.—The Dhond Baramati Railway, a narrow-gauge line 27½ miles long, which is worked by the Great Indian Peninsula Railway for 45 per cent. of the gross receipts, and is rebate-aided, is owned by the Dhond Baramati Railway Co. Ltd. The Government of India has the option to purchase the line on September 30, 1944, and has decided to exercise the option and given the required notice to the company. On the completion of the purchase the line will continue to be worked by the G.I.P.R.

Babcock & Wilcox Limited.—Trading balance for the year 1943 after depreciation, etc., was £714,532 (£667,491 after writing off £46,987 shares in associated companies) and dividends interest, etc., amounted to £74,494, making £789,026. Net profit after making provision for N.D.C. £29,000, staff pensions £48,446, etc., was £638,583, and £107,063 was brought in. For income tax the provision is £362,333. Final dividend on the ordinary stock is 6 per cent., plus a bonus of 1 per cent., making a total distribution of 11 per cent. (same), and £131,224 is carried forward. The amount of unexecuted orders on the books at December 31 last remained at a satisfactorily high level.

Derailment of Glasgow Express.—Colonel **A. H.** C. Trench opened at Carlisle on May 23, on behalf of the Minister of War Transport, his inquiry into the derailment which occurred to a London-Glasgow express at Massband, near Gretna, on May 15 The fireman ran forward to the Gretna Junction signal box, 1½ miles distant, to give notice of the accident, although suffering badly from shock. Major Malcolm Speir, Chief Officer for Scotland, gave evidence to the effect that preliminary investigation appeared to indicate the possibility of some hidden weakness in the permanent way formation, suddenly developed, having contributed to the mishap. The Operating Manager for Scotland, Mr. J. Noel Phillipps, said that the train was being worked by a streamlined locomotive, in good working order, the total weight being 423 tons. He gave details of the position of the vehicles after the derailment and, referring to the delay in finding the passengers who were killed, explained that they were not discovered until the evening, although a careful search had been made by persons expert in that kind of work; they found no sign of any one. The bodies were found completely buried by wreckage. It was stated that some track repairs had been in progress during the week-end, but nothing unusual had been remarked by passing train crews. Colonel Trench visited the scene and decided to continue his inquiry in private.

Bundoran Hotel, G.N.R. (I.).—On the invitation of the Great Northern Railway Company (Ireland) a large party of pressmen and advertising agents from Northern Ireland and Eire were entertained at the company's Bundoran hotel during a recent weekend. This has become an annual event, and gives the visitors an opportunity of appreciating the many amenities of the hotel and its fine surroundings, as well as of

British and Irish Railway Stocks and Shares

Stocks	Highest 1943	Lowest 1943	Prices May 30, 1944	Prices Rise/Fall
G.W.R.				
Cons. Ord.	65½	57½	61½	+ ½
5% Con. Pref. ...	120½	108	119½	—
5% Red. Pref. (1950)	110½	106	106	—
5% Rt. Charge ...	137½	123½	133½	—
5% Cons. Guar. ...	135½	121 7/8	131½	—
4% Deb.	118	107½	115	—
4½% Deb.	119	109 7/8	116½	—
4½% Deb.	124½	116	121½	—
5% Deb.	138	127	133½	+ 2
2½% Deb.	77	72½	75½	—
L.M.S.R.				
Ord.	34⅛	28	31½	— ½
4% Pref. (1923) ...	66½	58	61½	+ ½
4% Pref.	80½	73	80	+ 1
5% Red. Pref. (1955)	105½	102	104½	—
4% Guar.	107	98½	103	—
4% Deb.	109⅜	103½	108	+ ½
5% Red. Deb. (1952)	111½	108	109½	—
L.N.E.R.				
5% Pref. Ord. ...	12 7/8	7⅜	9⅞	+ ⅜
Def. Ord.	5⅜	3⅜	4⅝	+ ⅛
4% First Pref. ...	66½	57½	61½	+ ½
4% Second Pref. ...	36½	30½	33½	+ ½
5% Red. Pref. (1955)	99⅜	93	100½	—
4% First Guar. ...	102½	94	100	+ 1
4% Second Guar. ...	93½	85⅜	91½	+
3% Deb.	86⅜	78⅜	84	—
4% Deb.	109 7/8	101⅜	106½	—
5% Red. Deb. (1947)	106½	102	103	—
4½% Sinking Fund Red. Deb.	108	103½	105½	—
SOUTHERN				
Pref. Ord.	80	72½	80	+ 1
Def. Ord.	26⅜	20⅜	25½	+ ½
5% Pref.	119½	106⅜	118½	—
5% Red. Pref. (1964)	114	108½	114½	—
5% Guar. Pref. ...	136	122	131½	—
5% Red. Guar. Pref. (1957)	117	109⅜	114½	—
4% Deb.	117½	106	113	—
5% Deb.	137	126	132	—
4% Red. Deb. (1962-67)	112	106½	110½	—
4% Red. Deb. (1970-80)	112	107	110½	—
FORTH BRIDGE				
% Deb	109	104½	105	—
% Guar.	105	102½	103½	—
L.P.T.B.				
4½% "A"	125½	114	122½	—
5% "A"	133 3/8	123	131½	—
3% Guar. (1967-72) ...	100½	97	99	—
5% "B"	124	114	122½	—
"C"	72	53	72	—
MERSEY				
Ord.	34½	27	33½	—
3% Perp. Pref. ...	68	59½	69	—
4% Perp. Deb. ...	104	102½	103	—
3% Perp. Deb. ...	83	78½	79	—
IRELAND*				
BELFAST & C.D.				
Ord.	9	6	8½	+ 1½
G. NORTHERN				
Ord.	24½	16	25	— ½
Pref.	—	—	44½	— ½
Guar.	—	—	64½	— ½
Deb.	—	—	86½	+ ½
G. SOUTHERN				
Ord.	30	9½	44½	—
Pref.	30	11	44⅜	—
Guar.	64	26½	65	+ 1½
Deb.	88½	51½	87½	— ½

* Latest available quotations § ex-dividend

OFFICIAL NOTICES

OFFICIAL ADVERTISEMENTS

OFFICIAL ADVERTISEMENTS intended for insertion on this page should be sent in as early in the week as possible. The latest time for receiving official advertisements for this page for the current week's issue is 9.30 a.m. on the preceding Monday. All advertisements should be addressed to:—*The Railway Gazette*, 33, Tothill Street, Westminster, London, S.W.1.

London and North Eastern Railway Company

NOTICE is hereby given that, for the purpose of preparing the warrants for Interest on the Company's 3 per cent. and 4 per cent. Debenture Stocks and 4½ per cent. Sinking Fund Debenture Stock for the half-year ending 30th June, 1944, the balances will be struck as at the close of business on 10th June, and Interest will be payable only to those Stockholders whose names are registered on that date.

Transfers of the above-mentioned Stocks should, therefore, be lodged with the Registrar of the Company at Hamilton Buildings, Liverpool Street Station, London, E.C.2, before 1 p.m. on the 10th June.

By Order.
W. H. JOHNSON,
Secretary.

Marylebone Station,
London, N.W.1.
31st May, 1944.

Universal Directory of Railway Officials and Railway Year Book

50th Annual Edition, 1944-45 in preparation

This unique publication gives the names of all the principal railway officers throughout the world, together with essential particulars of the systems with which they are connected. Much general and statistical information about railways is also concisely presented

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holding their yearly golf competitions on the company's 18-hole course. Among those present were Mr. G. B. Howden, General Manager, and Mr. F. C. Wallace Secretary.

British Timken Limited.—Accounts for 1943 will not be ready for submission until September next, but as the profits will permit of the normal dividend of 15 per cent. for the year being paid the directors have decided to pay this dividend as an interim on June 17. No further dividend will be proposed when the accounts are submitted. The first and final dividend for 1942 was 15 per cent.

British Electric Traction Co. Ltd.—Preliminary figures for the year ended March 31, 1944, show a total revenue of £767,962 (£760,293). After deducting general expenses and debenture stock interest and providing £312,677 (£311,032) for taxation there remains for appropriation (subject to audit) £316,441. compared with £309,915. The directors recommend final dividends subject to tax of 5 per cent. on the 6 per cent. participating preference stock, again making 8 per cent. for the year; of 4 per cent. on the 8 per cent. preferred ordinary stock, again making 8 per cent. for the year; and of 30 per cent. on the deferred ordinary stock, again making 45 per cent. for the year, leaving £56,961 to be transferred to undivided profits account. The accounts for the year under review will be presented in an altered form, and the figures for the previous year have been adjusted to facilitate comparison.

Bolivar and Puerto Cabello Railways.—A scheme submitted by the Bolivar Railway Co. Ltd. provides for the acquisition of the undertaking and assets of the Puerto Cabello & Valencia Railway Co. Ltd. for £28,750 in cash. It also provides that the Bolivar Company will issue £180,000 five per cent. "A" debenture stock in exchange for the £180,000 first charge coupon bonds of the Puerto Cabello Company, and also will issue to the Securities Agency Limited £141,900 "B" debenture stock in full discharge of its loan of that amount. The existing £273,241 of Bolivar 6 per cent. debenture stock will in future be known as "C" stock. It will continue to bear interest at 6 per cent., but this, though cumulative, will be payable only out of profits remaining after the service of the "A" and "B" stocks. Of the £234,987 arrears of interest on the 6 per cent. stock £98,677 will be forgone, and the balance will be satisfied by an issue of £136,620 funding certificates. Bolivar preference holders' rights will not be altered, but resolutions will be submitted later to a general meeting for conversion of preference shares into stock and for reduction of the Bolivar ordinary capital. A general meeting of the holders of the 6 per cent. debenture stock has been convened for June 8. (*See editorial note, page* 562).

London Busmen's Horticulture.—More than 2,000 busmen, members of the London Transport Central Bus Horticultural Association, are to compete for a silver medal to be awarded by the Royal Horticultural Society for the best allotment or garden during 1944. This year, 32 tons of lime, 12 tons of seed potatoes, 7½ tons of fertilisers, and 6,922 packets of seeds have been distributed to members.

Closer Working of Ulster Railways.—Joint arrangements have been adopted by the Boards of the Belfast & County Down and the Great Northern Railway, whereby closer working and co-ordination will be effected in the traffic departments of the two companies. The services of Mr. G. B. Howden, General Manager of the G.N.R. will be available to the board of the County Down in an advisory capacity. The new arrangements will come into operation on August 1. No details of the arrangements are available at present but it is understood that a statement will be issued at a later date.

L.N.E.R. Extension of Time Application.—The London & North Eastern Railway Company is applying to the Ministry of War Transport for an Order under Section 1 of the Special Enactments (Extension of Time) Act, 1940, extending by three years the time now limited by the L.N.E.R. (Extension of Time) Order, 1941 (S.R. & O. 1941, No. 1450), (i) for the completion of Railways 1 and 2 at Finsbury Park originally authorised by Section 5 of the L.N.E.R. Act, 1924; (ii) for the acquisition of lands required for widenings 1 and 3 in Whetstone and Hucknall respectively authorised by Section 5 of the L.N.E.R. Act, 1938; and (iii) for the acquisition of lands authorised to be acquired by Section 17 of the 1938 Act in the rural districts of Rugby, Lutterworth and Basford.

Institute of Transport Silver Jubilee.—The session 1944-45, which commences on October 1 next, will be the silver jubilee session of the Institute of Transport; and to commemorate it the Council has approved the following special arrangements. The presidential address inaugurating silver jubilee year will be given in the first week of next October, and on November 3 an anniversary luncheon will be held (the meeting at which the resolution was passed to found the Institute was held on November 3, 1919). In 1945, a commemorative meeting will take place on March 22 (the first public meeting of the Institute was held on March 22, 1920, at the Institution of Civil Engineers); and if conditions at the time permit, a social function will take place on March 23. In addition, papers are being prepared for publication in the *Journal* of the Institute, on the history of the Institute by Mr. D. R. Lamb, and on Transport Developments, 1919-44, by Mr. R. Bell. Other arrangements to commemorate the occasion will be announced later.

Another L.M.S.R. "Coronation" Class Engine to be Named.—Another L.M.S.R. locomotive of the "Coronation" class is to be named shortly. According to present arrangements the ceremony will take place at Lichfield on June 20, and the engine is to be named *City of Lichfield*. It is expected that civic representatives, the Bishop of Lichfield, and Lord Royden, Chairman of the London Midland & Scottish Railway Company, will be present.

North British Locomotive Co. Ltd.—After providing £30,000 (£35,000) for depreciation, the profit for the year 1943 amounts to £203,891 (£228,349). For taxation £120,000 (£150,000) is provided, and the allocation to reserve is £25,000 (£50,000), leaving a net profit of £58,891 (£28,349), to which has to be added £50,145 brought in. The preference dividend takes £18,750 (same) and the directors recommend a dividend on the ordinary of 5 per cent. (3 per cent.), requiring £31,250 (£18,750), and leaving £59,037 to go forward. Jointly with the Vulcan Foundry the company has acquired an interest in Robert Stephenson & Hawthorns Limited. This is expected to ensure the maintenance and development of co-operative working within the locomotive industry and thus strengthen its post-war position.

Contracts and Tenders

The Metropolitan-Vickers Electrical Co. Ltd. states that the London & North Eastern Railway Company has extended its contract for Cosmos and Metrovick lamps for a further period of 12 months.

Forthcoming Meetings

June 3 (*Sat.*).—Permanent Way Institution (Manchester & Liverpool and Notts. & Derby Sections), visit to Shelton Iron, Steel & Coal Co. Ltd. works, Etruria, near Stoke-on-Trent, 3 p.m.

June 6 (*Tues.*).—Institution of Civil Engineers, Great George Street, Westminster, London, S.W.1, 5.30 p.m. Annual general meeting.

June 13 (*Tues.*).—Institution of Civil Engineers, Great George Street, Westminster, London, S.W.1, 5.30 p.m. James Forrest Lecture by Professor C. E. Inglis.

Railway Stock Market

Renewed strength developed in stock markets, with sentiment reflecting the war news and industrial shares a particularly strong feature in response to broadening demand since publication of the Government's White Paper on employment policy. The latter has met with general approval and has increased the belief that everything will be done to make the eventual change-over to peace-time working as successful as possible in view of the Government's aim of maintaining spending power at home and rehabilitating export trade. Granted there is a large measure of success in securing full employment of the country's resources and labour power after the war, earnings of the railways should reflect active industrial conditions, and the main-line companies should earn standard revenue, which would mean dividends well above those now possible under wartime controls and the fixed rental. If, as is generally believed, the White Paper on employment policy is a bull point for industry it must also be regarded as a bull point for the railways, although this appears to have escaped the attention of many commentators on the White Paper.

It is true that home railway stocks have been a distinctly better market than in recent weeks, but this was attributed to the renewal of hopes of revision on the control agremeent, now that the case for the latter has been presented to the Minister of War Transport. There are, however, numerous other factors, apart from the possibility of revision of the agreement, which suggest that home railway stocks are considerably undervalued in comparison with industrial and other equity shares. As has been mentioned here on numerous occasions, the high yields on home railway junior stocks are due mainly to the uncertainty which continues to surround the position of the railways after the war. It is to be hoped that when commenting on the case for revision of the control agreement, the Minister of War Transport will also take the opportunity to give some clearer indication of Government policy as to the railways after the war.

Apart from these and similar considerations, however, it would seem that home railway junior stocks are due for good improvement in price, bearing in mind that they have participated only to a very limited extent in the widespread rise in stock markets in recent weeks. With yields on many leading industrials no better than 3 per cent., it is probable that if buoyant markets continue, the yields of around 8 per cent. on home railway stocks will attract increased attention. L.N.E.R. deferred and preferred have been in better demand, because if, after all, there were revision of the control agreement, it would have to be on lines which would permit these stocks receiving dividend payments. L.N.E.R. second preference have also been in better demand, because this stock would presumably have to receive its full 4 per cent., if the deferred and preferred came into the dividend list.

Compared with a week ago, Great Western ordinary has strengthened from 61 to 61¼; the 5 per cent. preference kept at 119, and the 4 per cent. debentures at 115, but the guaranteed stock improved half-a-point to 132. L.M.S.R. ordinary has rallied from 31¾ to 32¼, and the first preference was fractionally higher at 80, as was the 1923 preference at 61¼. Among L.N.E.R. stocks, the deferred strengthened to 4⅞, the preferred to 9¾, the first preference from 60¾ to 61¼, and the second preference from 33⅛ to 33⅝. Southern preferred improved from 79 to 79½, and the deferred from 24¾ to 25; the guaranteed stock was also better at 132, although the 5 per cent. preference at 118 was unchanged on balance. London Transport "C" remained at 72¼.

Argentine railway issues reflected the better tendency of markets, particularly the debenture and preference stocks, but best prices were not held. B.A. Gt. Southern 6 per cent. preference improved to 19½, and the 4 per cent. debentures to 59, and B.A. & Pacific 4½ per cent. debentures were 54½, and Central Argentine 4 per cent. debentures 50. Elsewhere, Leopoldina debentures eased to 56, and United of Havana debentures reacted from 29½ to 28. San Paulo ordinary kept at 54. Canadian Pacifics at 15⅞ lost part of an earlier improvement.

Traffic Table and Stock Prices of Overseas and Foreign Railways

	Railways	Miles open	Week ending	Traffic for week: Total this year	Traffic for week: Inc. or dec. compared with 1942/3	No. of Weeks	Aggregate traffics to date: Totals 1943/4	Aggregate traffics to date: Totals 1942/3	Aggregate traffics to date: Increase or decrease	Shares or stock	Prices: Highest 1943	Prices: Lowest 1943	Prices: May 30, 1944	Prices: Yield % (See Note)
				£	£		£	£	£					
South & Central America	Antofagasta (Chile) & Bolivia	834	21.5.44	26,730	– 10,760	21	583,420	563,410	+ 20 010	Ord. Stk.	15¾	10	10¼	Nil
	Argentine North Eastern ...	753	20.5.44	16,698	+ 3,228	47	683,100	579,858	+ 103.242	,,	7⅛	5	5	Nil
	Bolivar	174	Apr., 1944	5,106	– 444	17	21,059	21,881	– 822	Bonds	23¼	19	16½	Nil
	Brazil	—	—	—	—	—	—	—	—	6 p.c. Deb.	22½	18	17½	Nil
	Buenos Ayres & Pacific ...	2,807	20.5.44	126,000	+ 33,300	47	5,060,760	4,694,640	+ 366,120	Ord. Stk.	8½	5¼	5⅜	Nil
	Buenos Ayres Great Southern	5,080	20.5.44	155,400	– 16,020	47	8,284,380	7,576,080	+ 708.300	Ord. Stk.	17¼	9¼	11⅛	Nil
	Buenos Ayres Western ...	1,930	20.5.44	62,400	+ 4,860	47	2,640,180	2,545.740	+ 94,440	,,	16	9⅞	11	Nil
	Central Argentine	3,700	20.5.44	160,758	+ 39,159	47	7,151,670	6,172,008	+ 979,662	,,	10¾	6¼	8⅛	Nil
	Do.	—	—	—	—	—	—	—	—	Dfd.	4⅜	3	4	Nil
	Cent. Uruguay of M. Video	972	20.5.44	33,955	– 5,543	47	1.584,446	1,384,185	+ 200,261	Ord. Stk.	7⅛	4¼	4¼	Nil
	Costa Rica	262	Apr., 1944	25,389	+ 7,380	42	225,154	150,966	+ 74,188	Stk.	16	12¼	15	Nil
	Dorada	70	Apr., 1944	24,058	+ 7,258	17	97,339	76,320	+ 21.019	1 Mt. Db.	96	92	93½	6½
	Entre Rios	808	20.5.44	19,518	+ 2,064	47	914,634	830,214	+ 84,420	Ord. Stk.	9	5½	5	Nil
	Great Western of Brazil ...	1,030	20.5.44	16,300	– 2,400	21	452,600	328,600	+ 124,000	Ord. Sh.	59/9	24/4½	36/3	Nil
	International of Cl. Amer. ...	794	Mar., 1944	$799,554	+ $89.552	12	$2,333,642	$2,022,352	+ $311,290	—	—	—	—	—
	Interoceanic of Mexico ...	—	—	—	—	—	—	—	—	1st Pref.	2⅜	1⅛	⅜	Nil
	La Guaira & Caracas... ...	22½	Apr., 1944	7,490	– 950	17	29,446	35,875	– 6,429	5 p.c. Deb.	90	80	81½	Nil
	Leopoldina	1,918	20.5.44	58,928	+ 27,067	21	924,169	655,059	+ 269,110	Ord. Stk.	7⅜	4	5	Nil
	Mexican	483	21.5.44	ps. 428,900	+ ps.79,600	21	ps. 8,502,300	ps. 7,308,700	+ ps. 1,193,600	Ord. Stk.	1⅜	⅜	½	Nil
	Midland Uruguay	319	Mar., 1944	17,124	– 1,790	38	154,326	135, 614	+ 18,712	—	—	—	—	—
	Nitrate	382	15.5.44	5,425	+ 290	20	75,540	55,150	+ 20,390	Ord. Sh.	83/9	71/3	68/9	Nil
	Paraguay Central	274	19.5.44	$57,328	+ $10,668	21	$2,400,779	$1,918,610	+ $482,169	Pr. Li. Stk.	75	51½	73½	7½
	Peruvian Corporation ...	1,059	Apr., 1944	121,109	+ 31,298	44	1,085,795	847,392	+ 238,403	Pref.	17⅞	10⅜	11½	Nil
	Salvador	100	Mar., 1944	c174,000	+ c 34,000	38	c 1.158,000	c 912,000	+ c 246,000	—	—	—	—	—
	San Paulo	153½	—	—	—	—	—	—	—	Ord. Stk.	71	57	54½	3⅜
	Taltal	160	Apr., 1944	4,645	+ 2,175	44	54,660	43,816	+ 10,844	Ord. Sh.	37/6	20/-	17/6	Nil
	United of Havana	1,301	20.5.44	57,933	+ 10,168	47	2,700,661	2,405.574	+ 295,087	Ord. Stk.,	8½	3¼	3½	Nil
	Uruguay Northern	73	Mar., 1944	1,634	+ 49	38	13,149	12,649	+ 500	—	—	—	—	—
Canada	Canadian Pacific	17,034	14.5.44	1,229,200	+ 160,600	20	22,504,000	19,539,400	+ 2,964,600	Ord. Stk.	18	13⅞	16	Nil
India†	Barsi Light	202	Mar., 1944	25,425	+ 2,332	52	263,025	220,695	+ 42,330	—	—	—	—	—
	Bengal-Nagpur	3,267	Mar., 1944	1,036,350	– 125,175	11	12,526,575	11,211,375	+ 1,315,200	Ord. Stk.	104½	101½	108½§	3
	Madras & Southern Mahratta	2,939	Mar., 1944	358,125	– 7,925	52	10,447,866	8,913,942	+ 1,533,924	—	—	—	—	—
	South Indian	2,349	20.12.43	199,410	+ 24,449	37	5,321,558	4,562,445	+ 750,113	—	—	—	—	—
Various	Egyptian Delta	—	20.4.44	20,399	+ 6,556	4	603,664	458,496	+ 145,168	Prf. Sh.	6⅛	2⅛	4	Nil
	Manila	—	—	—	—	—	—	—	—	B. Deb.	45	32	40	8½
	Midland of W. Australia ...	277	Feb., 1944	21,583	– 6.758	33	245,504	252,708	– 7,204	Inc. Deb.	101	93	100½	6
	Nigerian	1,900	26.2.44	77,452	+ 4,782	34	3,792,517	3,262.161	+ 530,356	—	—	—	—	—
	South Africa	13,291	5.2.44	906,790	+ 63,914	46	37,522,295	34,935,498	+ 2,586,797	—	—	—	—	—
	Victoria	4,774	Dec., 1943	1,414,598	– 101,765	—	—	—	—	—	—	—	—	—

Note. Yields are based on the approximate current price and are within a fraction of ⅛. Argentine traffics are given in sterling calculated @ 16⅔ pesos to the £
† Receipts are calculated @ 1s. 6d. to the rupee § ex dividend